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ORIGINAL COMMUNICATIONS.

ART. I.—*Febris Complicata of India.* By SURGEON-MAJOR ALBERT A. GORE, M.D.; Fellow of the Royal College of Surgeons, and Member of the King and Queen's College of Physicians, in Ireland; in Medical Charge of the Female Hospital, Staff and Departments, Dublin.

FOR some years past the observations of a few military surgeons, made independently of each other, have shown that the division of all tropical and sub-tropical fevers into ague, remittent fever, febricula, simple continued, and typhoid fevers, is not entirely satisfactory, because it does not embrace a form of pyrexia, which, to be properly described, cannot with propriety be placed under any of these headings, though, for want of a better name, it is included under one or other of them. In olden times it would probably have been entered as "Common Continued Fever"—a comprehensive term which then included many varieties of febrile disease. Morehead, who divided remittent fever into simple and complicated, remarked that the simplest and most practical view to take of some of the fevers attacking Europeans at certain stations in India was that they were compound in their nature, "the product partly of malaria and partly of elevated temperature, conjoined with other ordinary exciting causes." His complicated adynamic remittent, in which there is present either a local inflammation or an aggravated degree of some kind of local derangement, very closely resembles the disease to which Dr. Veale, late Assistant Professor at Netley,

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dency to congestive inflammation of the lungs, liver, and spleen, and to neuralgic affections. For months after the fever had disappeared patients continued to suffer from sciatica, and even now on the occurrence of any slight ailment the tendency became developed. In remittent cases quinine seemed to do more harm than good. It seemed that the fever wore itself out, and the evident indication was to support the strength." Dr. Hendley went on to say:—"In bad cases, when the strength was gradually failing, and symptoms of congestion of the lungs were becoming daily more apparent, the patients were sent to Kasauli (a hill station), and although they travelled in the middle of June, all ultimately recovered. In all four fatal cases occurred. Three of these had relapses during convalescence, and died with marked symptoms of pneumonia."

Another regiment, the 38th, at Delhi was similarly affected (relapsing fever prevailing among the native troops and in the gaol). The fever was described by the surgeon as of malarial origin, the symptoms being regarded as those of remittent or continued fever. A very bad symptom—atonic inflammation of the lungs—appeared in many cases, and nearly all the fatal cases were consequent upon this complication.

With regard to the nature of the fever prevailing among the gaol population and the native soldiers, called then typhus and relapsing fever, the following later observations occur in the 16th Annual Report of the Sanitary Commissioner with the Government of India:—"During the month of April, 1879, Dr. Douglas Cunningham spent some time at Umballa, and very carefully watched a number of cases of the fever which prevailed in the gaol. He made several very minute *post mortem* examinations. . . .

It may be noted that, in respect to several points, the account given of the disease and of the *post mortem* appearances does not agree with what is known of ordinary typhus; the characteristic intestinal lesions of typhoid fever were altogether wanting; and there was a complete absence of any traces of the spirilla, which frequently characterise, to a greater or less degree, the blood of persons suffering from what is designated relapsing or recurrent fever. The only definite *post mortem* lesions which may be said to have characterised, to a certain extent, the disease, were those of the lower end of the small, and the upper and terminal end of the large, intestine. These lesions were more or less evident in three out of the four cases examined, and are pathological changes which,

in the present state of our knowledge, are more characteristic of diseases of a malarious type than of any others." A microscopic examination indicated an apparent considerable destruction of blood corpuscles. Small-sized corpuscles were very numerous. Numerous particles and some bleached corpuscles were also found. There was a considerable excess of leucocytes, and much molecular matter in serum, and the red corpuscles were almost all aggregated into irregular masses, in place of the normal rouleaux. The *post mortem* appearances were—1. Pneumonic consolidation of lower lobe of right lung; intense pigmentation of jejunum; no disease of ileum; scattered points of congestion and apoplexy in cæcum; transverse colon yellowish-brown internally, thickened, irregularly ulcerated. 2. Pneumonic consolidation of upper and middle lobes of right lung; mucous membrane of jejunum pigmented; lower two feet of ileum deeply congested; no glandular lesion; circular patches of bright congestion and minute ulcers in large intestine. 3. Mucous membrane of small intestine congested in patches, as was also the large gut.

It will be seen hereafter that these appearances were very similar to those observed in fatal cases of complex fever among Europeans.

Rheumatic complications are noticed among the symptoms in complex fever in Europeans by the few observers who have recorded cases. In the fever, due to a localised malaria, which so seriously affected the native population in and about Saharunpore in 1866–67, and whose ravages were chiefly marked along certain watercourses and low, swampy valleys, Mr. Cutcliffe, the Civil Surgeon, reported:—"In some of the towns rheumatic affections were much complained of as attending the later stages of the fever." He also noticed that when the patient survived the remittent form, the disease usually became intermittent before it ceased, "the most common type being the quotidian, and at a later period of convalescence not infrequently tertian." In some cases of complex fever among Europeans the temperature charts show this mode of termination also.

Detachments or bodies of European troops passing through districts where this epidemic malaria is localised have contracted the disease and carried it with them. A detachment of the 85th Regt., marching from Futtahghur to Meerut in November, 1874, became affected by the fever while passing through the infected tract. The fever continued to show itself for weeks afterwards. The age

and service of the men were exceptional, and it was not attended by characteristic eruption or bowel complication. A parallel case—that of the 79th Regt., in 1866–67—also illustrating the effects of a localised malaria, excited by early marching and an unhealthy camping ground, is noticed also by Bryden in 1868. Nine men died, and as sequelæ there were 230 admissions on account of rheumatism, and 54 from orchitis. There are also many instances of the scorbutic taint being acquired, and adding its complication. This was noticed as early as 1834, during the fever epidemic of the rains in Western Rajpootana, which was preceded by scurvy so universal that the troops over the division are described as having “become unfit for service;” and the subsequent fevers are stated to have been “*much influenced in their symptoms and progress by the prevalent diathesis.*” One of the latest examples—that of a native regiment stationed at Linsugeer, in Beloochistan, reported by Hume in 1881, the men of which, after being exposed for four and a half months to one of the hottest mean temperatures recorded, drinking alkaline water and eating bad, indigenous salt, on the sudden accession of heavy rain had occasional attacks of fever, followed by rheumatism of a chronic and persistent character, due to a mixture of the malarial element and scorbutus, and showing a steady improvement with the use of lime-juice. Marked anæmia was also noticed among them.

In all the fatal cases of the complex malarial fever which attacked the 38th at Delhi in 1874, a “status typhosus” was present. After some days of simple febrile symptoms, the patient was suddenly attacked by a general pleuro-pneumonia, followed by delirium, sordes on the teeth, retention of urine, involuntary evacuations, and death. Conversely, in some of the cases of remittent fever in the severe epidemic of remittent and intermittent fever in the city of Umritsur in 1881, the “typhoid state” intervened—a dry, brown tongue, sordes on the teeth, frequent, weak, fluttering pulse, and other symptoms of prostration (Bennett); and the occurrence of dysentery as a sequela was well shown in the case of the 96th at Meean Meer in 1852–53, when the so-called relapsing fever was epidemic over Northern India. The regiment had suffered severely from remittent fever. Many of the weakly and debilitated during convalescence contracted dysentery, for which there were 344 admissions and 40 deaths. The cases were considered similar to those occurring in the native population (Bryden).

It is only by a careful comparison of the descriptions of this

disease, as given by different observers, that a common identity can be established.

In the cases of "febris complicata" described by Dr. Veale at Netley, the patients had been admitted from the Mediterranean stations. The disease began as a quotidian sometimes, or with lassitude, drowsiness, headache, loss of appetite, oftentimes nausea, vomiting, bowels constipated or the reverse. As the case progressed there was great debility; the person affected would not attend to anything; was hot day and night, thirsty, ill, despondent; would convalesce for a while, and then relapse. The diarrhœa would occasionally pass into dysentery. There were often chest symptoms, cough and flying pains about the thorax, expectoration tinged with blood, or maybe the individual would be seized with severe pain in the back or one of the limbs, causing extreme suffering; with all these rapidly emaciating and becoming anæmic, the hair would fall out, and the spleen and sometimes the liver would enlarge. In this stage the patient was sent to England, when, if the case was severe, all the symptoms were aggravated by arrival in a cold climate. The headache became more intense; the drowsiness would pass into stupor and low muttering delirium, with extreme prostration. The lungs became congested, and often took on a low form of inflammation. There might be epistaxis, or hæmoptysis, or bloody diarrhœa, the blood being either dark or bright red, the pain in the limbs developing into distressing rheumatism, with effusion into the joints. Endocarditis or other complication and death might occur at any time; or if recovering, the symptoms seemed to wear themselves out. There was also irritability, loss of vitality, dyspepsia, palpitation, pleurisy, and epididymitis nearly always. The fever might be of indefinite duration, and was, as already noted, believed to be associated with a malarial taint. The cases reported by Dr. Veale were admitted to Netley principally from Cyprus and Gibraltar. The senior Medical Officer at Cyprus attributed the 38 cases of continued fever which occurred there in 1879 to exposure to the sun whilst road-making, varieties of temperature at Mount Thrados, and intemperance. The hæmorrhages from the bowels, lungs, and stomach, which accompanied the severer forms of the remittent of 1878, were only observed in two instances, nor was the tendency to recur on the seventh, fourteenth, and twenty-first day so marked; while the principal Medical Officer at Gibraltar remarked in 1879 also that the 42nd Highlanders were so saturated with malaria imported

from Cyprus that their return to England was a necessity. They suffered severely from paroxysmal and remittent fever. He writes:—"The principal complications connected with Cyprus fever were severe congestions of internal organs, of the brain, lungs, liver, and especially of the spleen, which in all fatal cases was found to be much enlarged, occasionally dysenteric evacuations, and in many instances scorbutic affections. There was nothing observed resembling enteric fever."

Dr. Veale's temperature charts show a great similarity to the ones recorded in Bengal and at Aden, especially the following:—

CASE I. (a mild case of fever from Gibraltar)—No. 1,889, Private H. J., aged twenty-four, 2nd Battalion Rifle Brigade, admitted at Gibraltar 27th July, 1879 returned as "febricula;" invalided for "debility" following the attack. During the fever had "pains all over." Pain in left leg; sweated much at night. Admitted to Netley 12th Sept., 1879; weak, pale, wasted; systolic bruit in mitral area; night sweats.

28th.—Epistaxis, cough, purulent sputum, pain in back of head; tongue coated, whitish yellow, dry; great thirst.

October 2nd.—Bruit disappeared; no cough.

4th.—Severe pain along upper front and inner part of right thigh; hair falling out. As a rule, sleeps badly.

19th.—Quite free from pain.

November 28th.—Discharged to duty; hair beginning to grow. An example of a fever without any distinct local manifestations in lungs, liver, spleen, or joints, but there may have been endocarditis. Bowels regular, confined or moved three or four times a day. Pulse over 100; respirations, 22–24. Pyrexia common continued 42 days. Maximal temperature, 104·5°.

CASE II.—No. 858, Private C. H., aged twenty-two, 42nd Highlanders, sent from Malta to Cyprus; had there "fever and ague" in August, again in October and November. Transferred to Gibraltar; ague there in December, 1878, also in 1879. On 17th May had fever, headache, pain in the back, diarrhoea, vomiting; lasted during three weeks; part of time delirious, with dry cough and pain in liver and spleen. On its decline, pain in shoulder, back, groin, and knees; latter swollen, heated, painful. Invalided to Netley 15th September, very weak, wasted, and anæmic; memory impaired; slept well; had profuse perspirations at night; appetite good; great thirst; liver dulness increased; no cough or signs of chest ailment; spleen slightly enlarged.

December 31st.—Well; bowels regular; constipated or moved two or three times daily. Pulse, 80 and 92, 116. Temperature markedly remittent; maximum, 104·2° on several occasions.

CASE III. (occurring after residence in Malta, Cyprus, and Gibraltar)—Private T. H., aged twenty-two, 42nd Highlanders. Went from Malta to Cyprus, July, 1878, in good health. In Cyprus had "fever and ague." After transfer to Gibraltar had a fresh attack; six weeks in hospital. Invalided, and arrived at Netley 20th March, 1879. On 27th had a relapse of fever; at first thought to be ague.

2nd April.—Enlargement and tenderness of spleen; quinine had no effect on febrile movement.

24th May.—Right ankle swollen and painful.

26th.—Motions tinged with blood; spleen larger; liver a little painful.

4th June.—Left shoulder-joint painful; appetite fair.

8th.—Liver and spleen painful.

13th July.—Bursa of right patella swollen and painful; splenic dulness much decreased.

1st August.—Apparently free from all disease; discharged to duty; arsenic had been freely given after failure of the quinine; bowels regular or moved two or three times. Pulse, 90 to 144; temperature very irregular, but not very high—maximum, 101.8°.

CASE IV.—*Fever, Ague, Diarrhœa. Stupor, Death.*—No. 1,883, Private B. V., aged twenty-four, A. S. Corps, landed in good health in Cyprus, in July, 1878. Some time after landing had ague, recurring every other day. Invalided. Had several paroxysms during voyage home. Admitted to Netley, 28th November, 1878, very weak. Had a troublesome and persistent diarrhœa. About Christmas, temperature began to rise daily; stools semi-fluid and ochrey; liver enlarged and tender.

4th January.—Bowels moved seven times.

5th.—Unconscious; had a convulsion, followed by profuse sweating.

6th.—Urine and motions passed involuntarily.

9th.—Died.

Temperature, 107°; pulse, 160. Temperature irregular, with a distinct relapse ending in death.

Post mortem.—Membranes and vessels of brain congested and full of blood; lungs crepitant, but engorged; liver enlarged and pale; spleen 16 oz.; pulp soft. *Small intestines anæmic, but otherwise healthy.* Large intestines nothing abnormal.

The foregoing interesting cases were not published in the *Army Medical Reports* until 1881, and were unknown to the following officers, who had made independent observations at Aden and in India. The general course of the symptoms and the result of treatment, taking into consideration the differences of climate, were not dissimilar.

Under the heading "Continued Fever at Aden," Surgeon-Major Hubert Greene, A. M. Dept., contributed to the *Indian Medical Gazette*, in 1879, a series of cases "of pyrexia characterised by very persistent high temperature," with the view of elucidating "the nature of the complex diseases which are usually classed under the head of simple continued fever." The circumstances under which they occurred were these:—The 1st Batt. 14th P. W. O. Regiment arrived at Aden on the 28th December, 1878, having come direct from Ranikhet, a hill station in the Himalayas, where it had been quartered since March, 1877, and where its general health was stated to have been good. One man died of the fever at Aden, "*but no special lesions were discovered.*" The rest of the garrison, which consisted of three batteries of Artillery, and had been stationed at Aden for upwards of a year, remained free from the disease. The first case occurred early in January, the other nine between 30th January and 10th February. The men were all unmarried, lived under similar circumstances, being distributed evenly among the different barrack-rooms. They were, with one exception, steady, well-conducted men, not given to drink or addicted to vice, and their average service in India was six years. Mean air temperature of the three months, January, February, and March, 80°; minimum, 75°; range, 6°. Some thought it an "acclimatising fever," others a "sun fever," a few attributed it to "sea-bathing" or to "refraction of the sun's rays from the surrounding rock;" Dr. Greene to the insanitary condition of the settlement. *Apropos* of its being a "sun fever," we may recall for a moment the definition of the common continued fever given to Norman Chevers by a military surgeon who served during the Burmese war of 1837–8:—"The men ran about in the sun and got fever, which they called 'common continued fever.'" The following are the notes of the first case published by Surgeon-Major Greene. The treatment in the whole of the cases included nourishing diet, with small quantities of wine or brandy:—

CASE I.—Private C. G., aged twenty-seven; in India $1\frac{5}{12}$ years; previously healthy; reported sick, 7th January, 1879. Symptoms—Pyrexia, sleeplessness, debility. Medicine—Diaphoretic mixture every fourth hour.

13th.—Up to this date bowels regular; no abdominal symptoms whatever. Except high temperature, debility, and a certain amount of insomnia, the fever presented no character of any kind. Appetite pretty good, quinine and diaphoretics having no effect.

14th.—Fever stronger; headache; apply cold douche. *Vespere*—Very low, requiring 2 oz. brandy with soda water.

19th.—“Absolutely no symptoms except high temperature and debility. Ordered 4 oz. port wine, and 5 grains quinine thrice daily.”

26th.—“During past week this case has presented no salient symptoms of any kind except abnormal temperature. The patient’s appetite has been good, his bowels regular, and he has slept fairly. Since admission he has lost flesh considerably, and he looks very ill and debilitated.”

31st.—Omit quinine.

February 3rd.—For some days past there has been sluggishness of bowels. Ordered sulphate of magnesia mixture.

6th.—Salicin.

10th.—Omitted.

12th.—Night sweats have set in—no change in other respects. To have bark and ammonia in effervescence.

March 1st.—Gaining ground slowly, though evening temperature still high. Discharged to light duty at “The Isthmus.” No change (see Chart No. I.).

The other cases very similar in their general course, but with the following additional symptoms:—

CASE II.—Slight gurgling in right iliac fossa, but no tenderness or spots; skin dry; slightly jaundiced.

CASE III.—Slight delirium; pain in chest, with cough; twitching of muscles of extremities.

CASE IV.—Profuse nocturnal perspiration; severe pain in loins and left buttock; unable to use left leg.

CASE V.—Slight gurgling; profuse sweats; pain in left shoulder and knee.

CASE VI.—Readmitted with relapse and temperature of 104.8° ; violent perspirations; severe pain in lumbar region; later on unable to move without assistance; afterwards right wrist swollen and painful; pain in right hip, shooting down the leg.

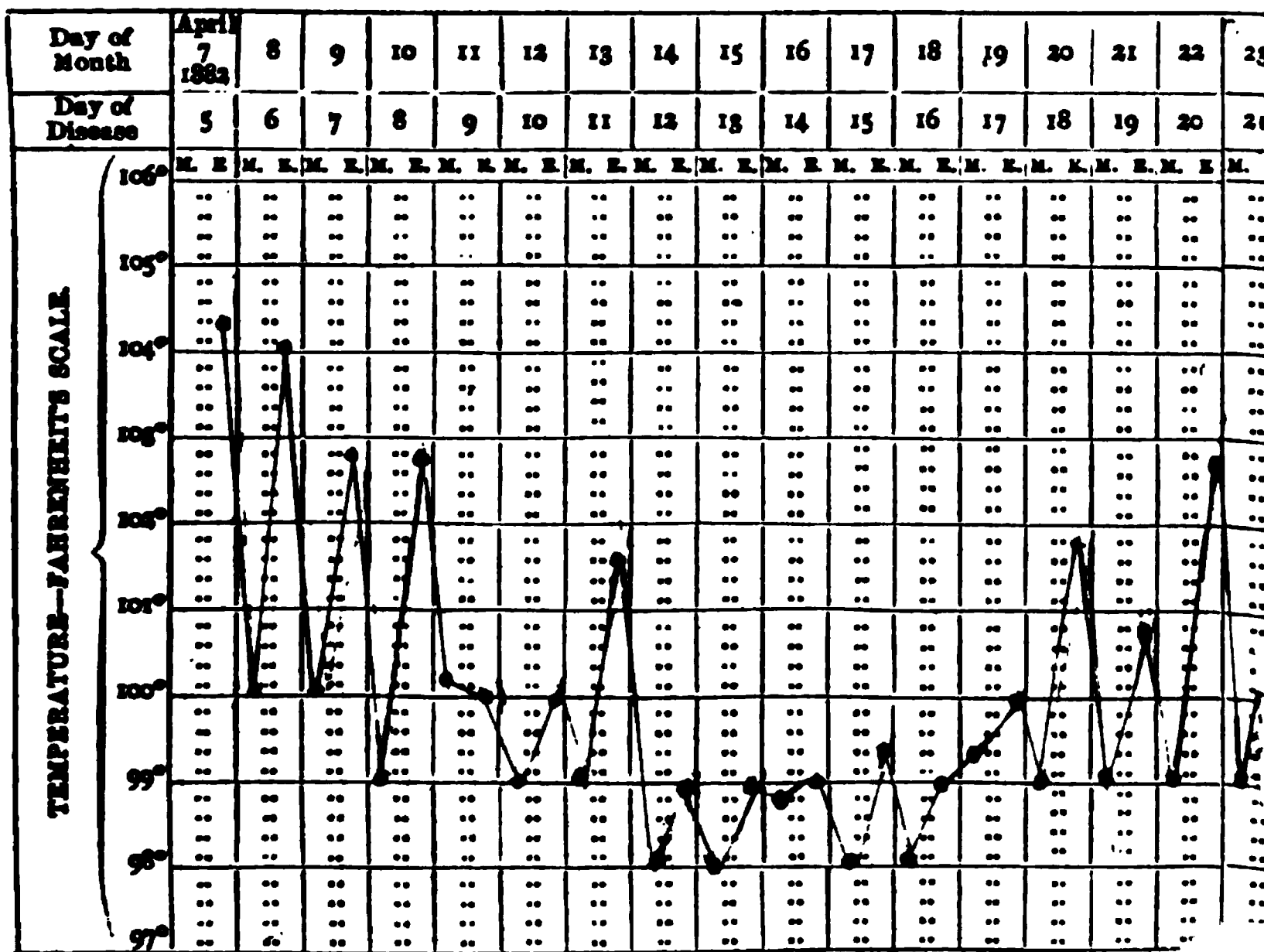
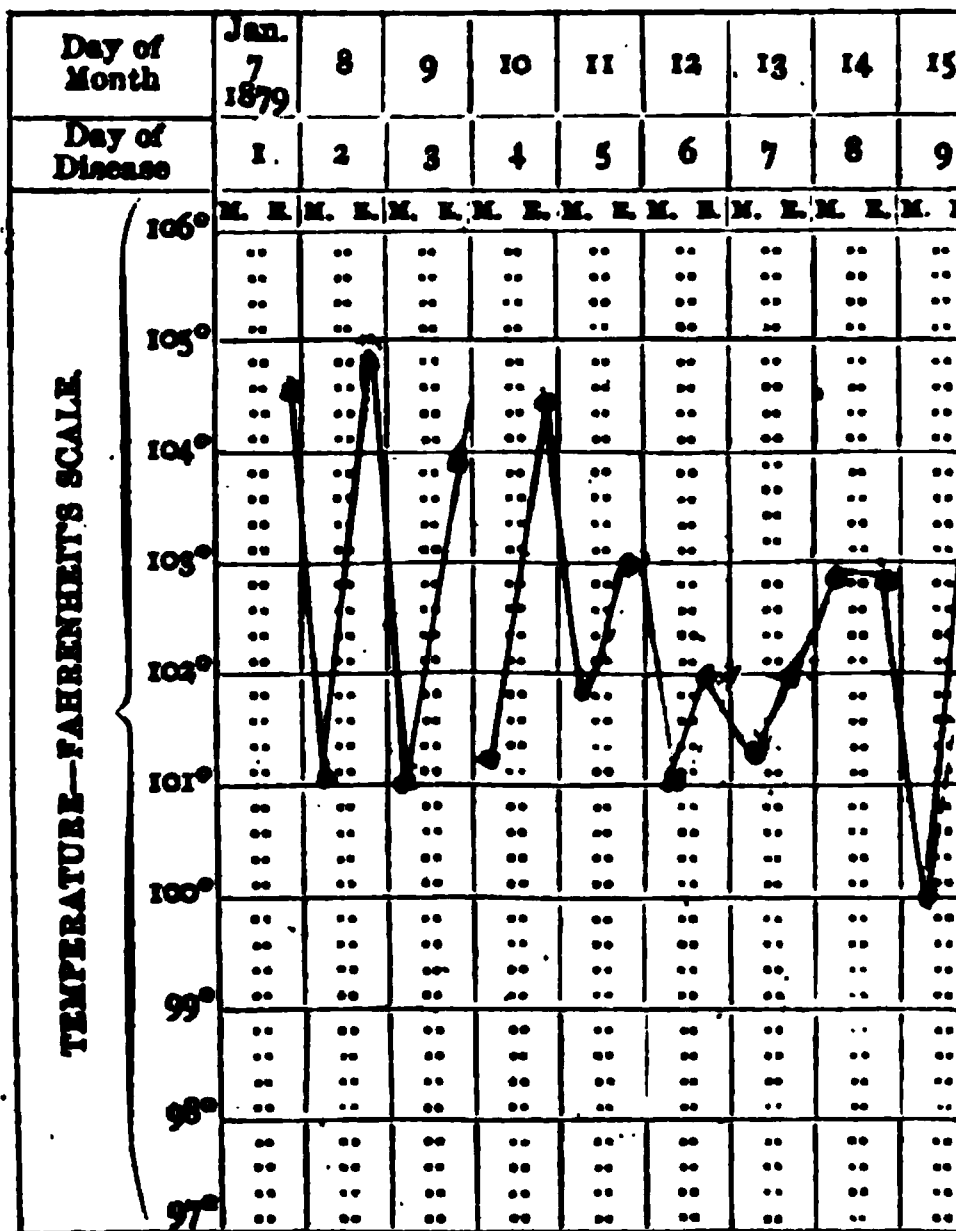
CASE VII.—Slight gurgling; no pain, tenderness, or spots.

CASE VIII.—Violent nocturnal perspirations.

CASE IX.—Constant dry cough: perspirations; pain in thigh, and sharp pain under left false ribs; several attacks of vomiting; hepatic pain and tenderness.

CASE X.—Fever; loose, white stools; loss of appetite; debility; gurgling; no tenderness; profuse perspirations; pain gradually extending to right knee; stiffness.

Of the whole number only one returned to duty; the remainder were so anæmic and debilitated as to require change to England.



The bowels were, as a rule, constipated, and the belly lank. In two cases there was slight fulness and tympanites. Purgatives were frequently required. The temperature was irregular, but often high—103°, 104°, or 105°; but the prolonged pyrexia did not end in a "status typhosus," nor any of the common symptoms of enteric fever. The intellect was, as a rule, clear throughout. The treatment was symptomatic. Quinine and other antipyretics and alkalies had not any effect in either checking the fever or moderating the rheumatic pains. Hypnotics were frequently required to procure sleep or allay pain. The pulse varied from 70 to 120, according to the temperature; and the tendency of the fever was to wear itself out.

With regard to Aden, it should be remarked that during the cold weather a chilly, damp wind blows from the Arabian hills across the sea, and there is sometimes very heavy rain. Men coming with light clothing from India with malaria in their systems, and probably a scorbutic taint, would if chilled by the foregoing climatic vicissitudes suffer from fever, the nature of which would vary with the constitution of the individual.

In the spring months of 1880 Surgeon-Major Doig, Army Medical Department, had several cases of this fever in the 40th Regiment. He gave the writer the following brief note of the march of his corps:—

"The 40th headquarters and two companies left Dum Dum (a very malarious station), 22nd January, and arrived at Benares by rail on 24th. Left Benares with the additional four companies which had been quartered there on 25th. Marched, *viâ* Lucknow, Setapur, Shahjahanpur, Bareilly, and Moradabad. At Shahjahanpur we left three companies. Arrived at Bareilly 6th March, and left on 7th. Arrived here (Chaubuttia, 6,900 feet above sea-level) on 26th March. We had no enteric fever on the road or after arrival. However on the last week of the march a peculiar form of fever appeared, which at first was taken to be a form of enteric, but after the *post mortem*, and seeing more cases, it was certainly not enteric. The fever was continued, in many cases very like enteric at first, but relapse occurred, and this also ultimately disappeared."

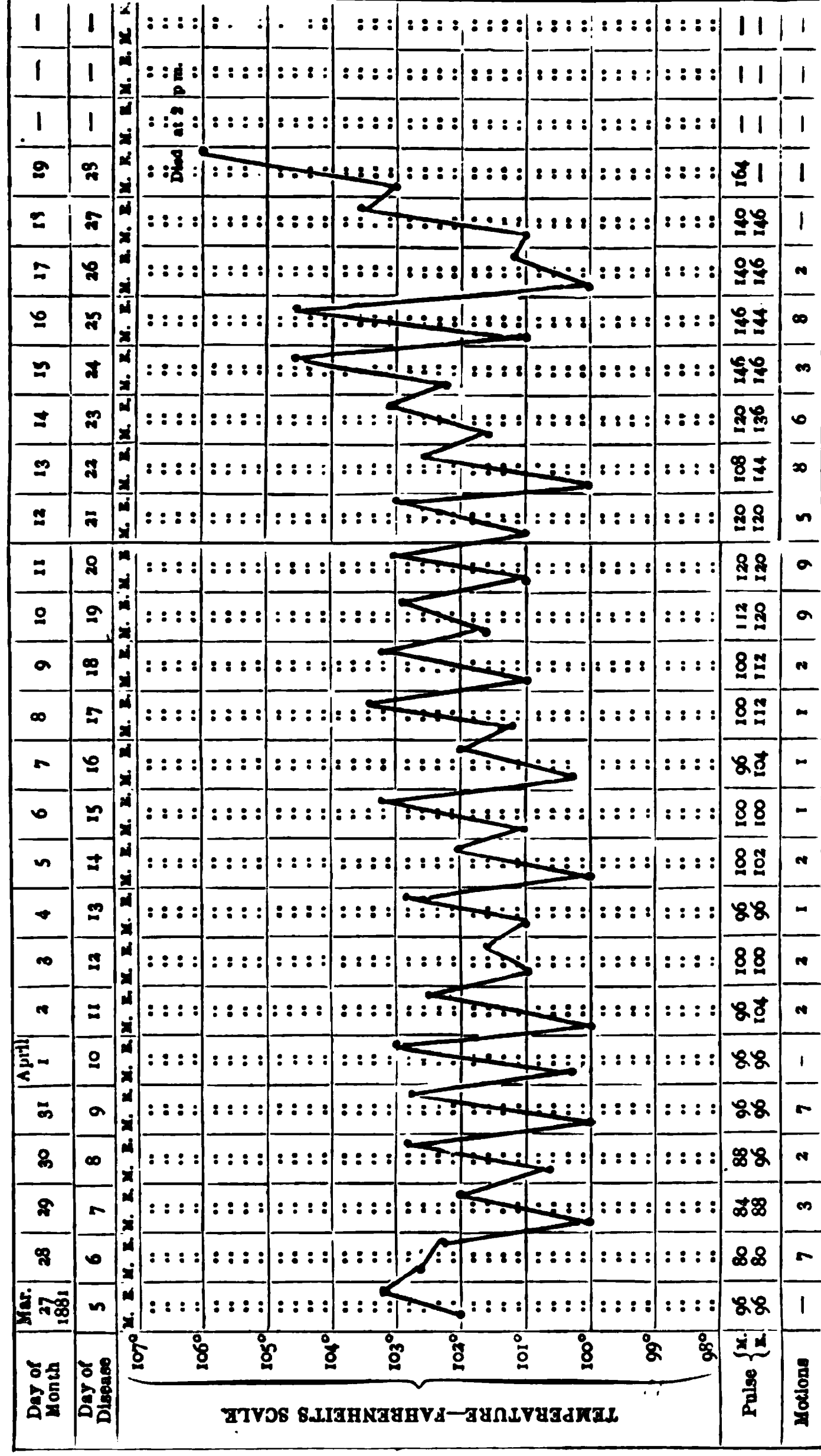
The 40th had been in Bengal since 1872, and had suffered much from malarious fevers. The men must have been more or less exhausted after so long a march as five or six hundred miles on arrival in the chilly atmosphere of Chaubuttia.

There must have been much waste of tissue, and probably accumulation of effete matter in the system. In the week ending 3rd April, after arrival, a great many of the men had relapses of ague. Four men were admitted with enteric fever. In the following week, ending 9th April, there were three admissions for enteric and one for remittent fever. All the men showed signs of being more or less ill and used up. In week ending 17th April, the admissions were mostly for ague and remittent fever. There were two fresh admissions for typhoid, which had probably been contracted at some of the camping grounds or on the road. By the 23rd there were four fresh admissions for ague, after which the attacks of ague were for the present less severe. On the march the regiment had halted a day a week, and five days at Shahjahanpur.

About one-half of Surgeon-Major Doig's cases occurred among the older class of soldiers. In by far the greater number the health previous to admission had been indifferent, and the patient pale and anæmic, and the first symptoms aguish in character. The general course of the fever was that of a long gastric-remittent or continued-remittent, with a tendency to relapse of the symptoms. As a rule, there was no enlargement of the liver or spleen. Bowels usually regular or constipated; in very few irregular or loose. In only a few cases were spots noticed. Tongue dirty, white, foul, afterwards clean; appetite fair; loss of flesh great, with accompanying anæmia; urine light-coloured, no albumen. Quinine or arsenic had no influence on the course of the fever, and large doses of the former medicine seemed to aggravate the symptoms. Pulse, 80 to 100. In a very few cases the looseness of the bowels was accompanied by pain in the iliac region, and an emphysematous gurgling or slight gurgling—a symptom common to many diseases. In some, rheumatic pains were very severe—in one going on to acute rheumatism. Evening temperature on admission, as a rule, 103° or 104°, occasionally 105°. There were usually evening exacerbations of temperature. Some of the cases were of very long duration, lasting for months. When there were marked remissions, quinine seemed to have some effect. As the anæmia became more marked, muscular pains were complained of in the back and thighs, shoulders, hips. The pupil would be also dilated where there was much anæmia present. The *post mortem* examinations in the fatal cases showed no specific lesions of the lower end of the ileum, enlargement of the mesenteric glands, or ulceration of Peyer's patches.

CHART OF TEMPERATURE.—II.

Name, Private J. K.; Age, 21; Disease, Complex Fever; Result, Death.



In one of Surgeon-Major Doig's last cases a large blood effusion was noticed, after the fatal termination, in the muscles of the lower abdomen; a hard, fibroid condition of the liver tissue; enlargement and hardening of the spleen; congested patches in the mucous membrane of the stomach and large bowel. This patient, aged twenty-one, $3\frac{9}{10}$ years' service, $2\frac{6}{12}$ in India, had suffered from malarial fever in August and September of 1880, at Shahjahanpur, in the plains; left there on the 24th February, 1881, and arrived at Chaubuttia on 21st March. The attack of fever, which proved fatal on the twenty-eighth day of illness, very much resembled enteric fever, but the appearances observed at the *post mortem* conclusively negatived such an opinion. It was also one of the few cases in which an eruption was observed. The patient was attacked with remittent fever three days after arrival—the evening temperature marking 103° ; pulse, 96 (see Chart No. II.). With regard to such cases, Surgeon-Major Doig wrote to me:—"Some of these cases with spots, some of which I saw last year, cannot be diagnosed at first from enteric. Either a *post mortem* if the event proves early fatal, or the remissions and relapses later on clearly show that they are not." The truth of these remarks was amply proved in the wards of our respective hospitals, and subsequently by cases treated by Surgeon-Major Knaggs. The first of these came under my observation in 1881:—

CASE I.—No. 490, Private W. W., 30th Regt., aged twenty-three, service five years. He had landed with his regiment in India on 9th February, 1880, and was with it at Bareilly when so many men of the same age suffered so severely from typhoid fever. On the division of the battalion in April, he was detached to Shahjahanpur; spent a hot season in the plains, and arrived at Ranikhet on 24th December. Dr. Laffan informed me that he had treated him for ague on the march up. He was of temperate habits; remained at his duty until 13th February, 1881, when he was admitted under my care, suffering from febrile symptoms—foul tongue, high temperature (104°). On the previous day he had had an attack of intermittent pyrexia. A few hours before there had been a violent storm of thunder, lightning, heavy rain, and snow, with an immediate reduction of temperature from 60° to 45° Fahr. The bowels were constipated. The sudden chill in a susceptible person probably accounted for the aguish symptoms. On the 14th the evening temperature fell to 102° ; 15th, 100° . A purgative was followed by a dark brown stool. No local insanitary conditions were present in or near his barrack room. On the evening of the 16th the temperature rose again to $104\cdot2^{\circ}$. The patient looked languid and pale; tongue

slightly furred; pulse, 96; some gurgling on making firm pressure over right iliac fossa. Quinine mixture was ordered. On the 20th the skin was moist; tongue clean at tip and edges, with a white fur upon dorsum; bowels confined; pulse, 80; evening temperature, 102.6° , followed by sweating. Complained of thirst. Remissions of 1° to 2° occurred daily, the temperature gradually falling to 101° on the morning of the 28th. Quinine was discontinued on the 25th. The pulse varied from 88 to 92, and the bowels remained constipated. There was little sleep. A chloral and bromide of potassium draught was ordered at night. Small doses of sulphate of magnesia brought away a dark semi-solid stool on 23rd. Continued languid. On 28th small crepitation at bases of both lungs was noted. Abdomen somewhat tympanitic; bowels still constipated; morning temperature, 101.6° —evening, 101° ; pulse, 88. The saline mixture was discontinued, and turpentine stupes applied to back of chest. Given 3 vi. of castor-oil upon milk, and chicken soup diet with port wine.

March 1st.—Slight delirium at night; coughed up a single, rusty, adhesive sputum; signs of congestion of base of both lungs.

2nd.—Evening temperature, 104° ; tongue tremulous and black; kept in bed with difficulty; enema followed by a semi-solid stool; abdomen tympanitic, rounded; few petechiæ, which remained permanent; no gurgling; under use of cold bath and antipyretic mixture (quinine, digitalis, and dilute nitric acid) pulse fell to 82; tongue cleaned; delirium ceased; lung symptoms and tympanites disappeared; sleep supervened, and temperature gradually fell to normal on the twenty-seventh day.

6th.—Passed a scanty greenish-coloured stool; a mild purgative caused a few fæcal stools, after which the bowels were, as a rule, constipated; had lost a good deal of flesh.

13th.—Urine of a dark-brown colour—sp. gr. 1020; no albumen.

On the thirtieth day there was a marked tendency to a cessation of all febrile action and restoration to health; but the prolonged pyrexia had produced asthenia and a proneness to relapse, which set in on 22nd March, the thirty-third day of the disease. Up to this date the case might easily have been mistaken for one of enteric fever, yet there were some marked differences. The onset was sudden and preceded by ague. The patient had resided sufficiently long in the plains to have contracted a malarial taint. He appeared not to have been predisposed to an attack of typhoid, as he had passed through a severe epidemic of that disease without having been affected. His company had been healthy since its arrival in the hills. There were no sanitary defects, and the season was as yet cold, and not that in which enteric cases usually cropped up. He had been subjected to a marked fall of temperature and chill just before the onset of the symptoms—a common exciting cause of climatic fever. The spots, though suspicious-looking at first, remained permanent, &

the few stools passed were altogether different from those characteristic of typhoid, which the after-pathological test proved the disease not to have been. During this relapse there was no recrudescence of the abdominal symptoms, and the bowels, when moved by enemata or saline purgatives in small doses, yielded only an ordinary fæcal stool. The temperature during the relapse was of a remittent or intermittent character, the evening exacerbations being followed by sweating. Pulse, 76 to 108, was not influenced by quinine. A crop of boils now began to appear. Appetite good; tongue moist, but slightly coated with a white fur; belly lank; much loss of flesh; stools natural when passed; slept well, but was occasionally restless. On 31st March (forty-second day of the fever) bed sores were tending to form on any prominent points; skin of a dirty hue; getting more emaciated; atonic boils very troublesome and painful.

April 5th.—Several small petechia over chest and abdomen becoming discoloured, dark and of a purpuric appearance; evening exacerbations of temperature running occasionally as high as 104° ; rheumatic pains in right shoulder. Bed sores became more troublesome, with signs of irritative fever towards end of April. He had then bed sores on both hips, sacrum, left shoulder, and crests of ilia. Lower limbs little more than skin and bone. Intellect unimpaired, but wandered a little at night.

25th.—Small abscesses formed in both inguinal glands and cellular tissue of abdomen. Urine light-coloured, sp. gr. 1030; no albumen; tongue clean. Bowels moved three times; appetite good; belly lank; no abdominal symptoms. There was afterwards some epigastric and hepatic tenderness. On May 1st swallowed some pieces of orange, which set up irritation of the bowels and diarrhoea, not (in his very weakened condition) influenced by astringents. Ultimately sank from exhaustion, and died on 9th May, the eighty-first day of his disease. Intellect clear almost to the last.

The *post mortem* appearances were, briefly—Great emaciation; superficial cerebral vessels congested; some pigmentation of mucous membrane of stomach; few patches of congestion in duodenum and jejunum; ileum thin; mucous membrane much congested, the colour deepening as the ileo-cæcal valve was approached; Peyer's patches healthy; colon, up to commencement of transverse portion, deeply congested; few superficial ulcers; mucous membrane pigmented; liver enlarged, and of a dark colour; spleen friable, soft, and congested; lungs crepitant and healthy at anterior margins, somewhat congested posteriorly; pleuræ more or less adherent.

The foregoing case may be compared with the following, which terminated in recovery:—

CASE II.—No. 1,721, Private J. A., 40th Regiment, aged twenty-nine; service, $11\frac{3}{4}$ years; garrison butcher at Ranikhet, where he had been ten months. Admitted under my care on the 7th April, 1882, with symptoms of complex fever without any ardent pyrexia. Had served several years in the plains. In Bengal since 1872; in the hills since February, 1880. In April, 1873, at Lucknow, had had an attack of fever, lasting thirty-seven days, and diagnosed as “Febricula.” Butchery situated rather low down, not quite 5,000 feet above sea level. Present attack commenced with fever at night and slight cough. Pyrexia on admission markedly remittent, 3 and 4 degrees; was followed by two relapses. Had no diarrhoea, swelling of abdomen, or tympanites. Slight bronchial symptoms on admission; bowels constipated as a rule; tongue clean and moist or slightly furred; rise of temperature not accompanied by any great sensation of fever; appetite occasionally impaired; no enlargement of spleen; at times tongue quite moist and clean when the temperature was high; no spots. During second relapse, coughed a good deal, but expectorated nothing; slight congestion of bases of both lungs noticed; no albumen in urine. Later on the temperature continued irregular and high, without any marked symptoms; bowels moved once a day; tongue quite clean and soft; appetite fair; abdomen soft; lost a little flesh only; slept fairly well. On 13th June, seventy-second day of the disease, his third relapse terminated, but he was not allowed to leave hospital for a month later, or nearly a hundred days since admission. He was then in good health, and returned to duty. Quinine, 10, 15, and 20 grains in the morning, diaphoretics in the afternoon; afterwards hydrochloric acid, chiretta, and liquor arsenicalis; suitable food. The third relapse treated by an alterative pill containing small quantities of grey powder, pulv. jacobii, ipecacuanha and Dover’s powder, and 20-grain doses of quinine as a suppository, appeared to have had a good effect (see Chart No. III.).

We had several similar cases in the 30th Regiment, all terminating in recovery, the tendency of the fever being to wear itself out.

A very interesting case of the disease was published in the *Indian Medical Gazette* of January, 1881, reported by Mr. O’Gorman, Subordinate, Medical Department. It was under the care of the late Surgeon-Major Curtis Martin at Landour. Private H. S., aged twenty-two, four years’ service in India, who had arrived at the depôt from Roorkee 26th July, 1882, “suffering from prolonged fever of a continued type.” Had had several previous attacks of ague in the plains, and on admission was pale, of a dingy, sallow complexion, sleeping little, but lying quietly in bed; always a little feverish in the evening; spleen much enlarged; appetite fair; bowels

regular. The patient died on 29th September, after a long illness. The only intestinal changes were a recent purplish-pink congestion of some inches of the jejunum, and patches of congestion in the colon; no ulceration; spleen much enlarged, soft, and friable; liver also enlarged.

Surgeon-Major Hinds, who had been to Baroda and Candahar, had at both these stations cases of a fever very similar to, if not identical with the foregoing, which, according to him, were best described by writing from a book a description of typhoid, leaving out the pathognomonic characteristic symptoms. When death occurred there were no specific ulcerations of the bowel—a severe continued fever, typhoid-like, but not typhoid. The pyrexia was too long for febricula, and neither intermittent nor remittent, nor was it a simple continued fever, although returned under that name. He at first considered the disease to be a kind of modified typhoid until a fatal case occurred, when no typhoid lesions were found. There were no characteristic spots, neither diarrhoea nor constipation; there was occasional gurgling; persistent headache, followed in bad cases by delirium, and a black, dry tongue. Some of the men had arrived at the latter station saturated with malaria, overtopped by a scorbutic taint. The disease prevailed during the long, hot weather.

ART. II.—*"Idiopathic Anæmia" of Addison.** By J. MAGEE FINNY, M.D., Dubl.; F.K.Q.C.P.I.; King's Professor of Practice of Medicine; Clinical Physician to Sir Patrick Dun's Hospital.

THE following are the notes of a case of *"Idiopathic Anæmia,"* from which the viscera (liver, spleen, kidneys, stomach, and heart) now exhibit were taken. Although I freely admit that this case throws no additional light upon the obscure pathology of the disease than what we already know, I trust the interest in it will not be lessened on that account. It is the first example of idiopathic anæmia which has been presented to the Academy since its formation, and no record of any similar case is to be found in the Proceedings of the old Pathological Society of Dublin.

CASE.—Mary C., a nurse by occupation, aged forty-four, widow, with one son, aged twenty, was admitted, on the recommendation of Dr. J. Knox Denham, into Sir Patrick Dun's Hospital, under my care, on Feb. 19, 1884, in a state of extreme pallor and prostration.

* Presented to the Pathological Section of the Academy of Medicine in Ireland, Feb. 29, 1884.

Family history.—Her father died at the age of twenty-eight of intemperate habits, her mother at the age of seventy years.

Personal medical history.—She enjoyed fair health always. Eighteen years ago she suffered a great shock, due to the death of her husband by drowning. Two years and a half ago she was treated in this hospital by Dr. William Moore, for an attack of jaundice. Since then she has never been quite strong, although able to discharge her duties as a monthly nurse, and has never been laid up with any sickness till now. Menstruation had ceased quietly about a year ago. There is no history of the loss of blood from any of the mucous membranes, or of black stools.

Present illness.—On the 9th of January last she was attacked with shivering and chills, her stomach became sick, and she discharged a greenish matter. Since then her chief complaints are debility, inability to take solid food, or even retain much fluid food, great shortness of breath, and the waxy yellow tint of her skin.

State on admission.—The skin is remarkably pallid, with a yellowish tinge, and dotted over the trunk and extremities (upper and lower) with purpuric spots, more or less circular, and measuring from one to three lines in diameter. The mammæ are flaccid and the areolæ of a natural colour, and there appears to be a complete absence of discolorations or pigmentary deposits everywhere, including the mucous membrane of the mouth. With the exception of the hands and face the whole body is fairly nourished, and covered with fat. The ankles were stated to be swollen before admission, but they are not swollen now.

The Eyes.—The conjunctivæ are remarkably white, free from all jaundice. The pupils respond to light and accommodation. Owing to her weak state the fundus of the eyes was not examined.

The Bones.—No irregularity or tenderness of the long or flat bones could be detected.

The Glands.—No enlargement of glands anywhere.

The Alimentary Canal.—The tongue, insides of the lips, and cheeks are blanched and pallid, and on them are visible a few ecchymoses of minute size. The tongue is dry and fissured, chiefly transversely, with some blood caked on it. The lips are dry, and similarly covered with dried blood. This seems to have come from the fissures in her tongue, as there has been an absence of all hæmoptysis or hæmatemesis. Thirst is a prominent symptom. The stomach is irritable, and although actual vomiting is not present it was stated to have been so before admission to hospital, and fluids alone are tolerated, and that in small quantities at a time. She is, however, able to take beef-tea, milk, eggs, and wine. The bowels are costive, and the abdomen is tympanitic, though not hard and resistant. Pain and tenderness on pressure over the epigastrium exist, but the most careful examination fails to detect any cancerous tumour of the stomach, or any enlargement of the liver or spleen.

Respiratory System.—There is a total absence of any abnormal breath-sound, or of any interference with the free expansion of the lungs. However, the breathing is short and hurried on any exertion, and she cannot breathe easily while lying on the right side—hence her attitude is either dorsal or on the left side.

The Circulatory System.—The pulse ranged from 92 to 102, and was small and compressible. Loud venous murmurs are audible in the neck. Faintness and panting breathing follow the effort to sit up or any sudden movement. The heart's impulse is in the normal position; the area of cardiac dulness is somewhat less than normal; there is no thrill on palpation; a soft systolic murmur, probably hæmic in nature, is audible at the apex and carried slightly into the axilla.

The urine when examined on the 22nd was acid, of sp. gr. 1,017, free from albumen and sugar and all deposit. The colour, which was darker than might have been expected, became deeper and more pronounced on the addition of nitric acid.

Her temperature was subfebrile, viz.:—

Feb. 21st.—Evening—Temperature, 101·4°; pulse, 92.

22nd.—Morning—Temperature, 100·4°; pulse, 96. Evening—Temperature, 100·6°; pulse, 94.

23rd.—Morning—Temperature, 97·8°; pulse, 92. Evening—Temperature, 100·4°; pulse, 112.

24th.—Morning—Temperature, 99°; pulse, 104. Evening—Temperature, 99·2°; pulse, 120.

25th.—Morning—Temperature, 100°; pulse, 112.

During the few days of her life in hospital the prostration became more marked, and she was unable to move or turn without assistance. Her sleep was very broken, and she suffered a good deal from the clammy mucus, often tinged with blood, which accumulated in her mouth, and which seemed to give rise to a short cough.

Treatment consisted in nutritious food and stimulating tonics; but the patient never really rallied, and died of asthenia on the 25th.

Post mortem examination was made nine hours after death. The thorax and abdomen were the only cavities opened.

The *skin* was of the same straw-yellow colour noticed during life; the sclerotics of a pearly white. Rigor mortis was but little marked, and there was an absence of cadaveric staining. The abdominal parietes were covered with half an inch of yellow fat, and there was but slight emaciation of the extremities.

The *lungs* were pale, but free from morbid changes.

The *heart* was normal in size, with some yellow fat on its surface. Its muscular tissue was far advanced in interstitial fatty degeneration, and the internal surface of the left ventricle, and especially the muscoli papillares, presented a typical example of the striated or zigzag appear-

ance to which the name of "tabby mottling" has been applied by Dr. Quain. This condition of the heart was not unnoticed by Addison, and is the most constant anatomical condition in idiopathic anæmia—so much so that some observers doubt the existence of the disease in the absence of this pathological change. The valves of the heart were healthy. A large, soft, pale clot occupied the right auricle; and some fluid, thin blood was removed from the vena cava for microscopical examination.

The *liver* was somewhat enlarged and dotted over with small, yellow-white bodies the size of hempseed, which were also found deep in its structure. They were unaccompanied by any surrounding change, and looked like a number of minute emboli or lymphatic growths. Their nature was, however, proved to be granular, and as if composed of the *débris* of a caseous degeneration. It is very probable that they were embolic in nature, and derived from the *spleen*. This organ was a little larger and firmer than normal, and otherwise healthy, except that at its upper end was found a nodule the size of a small marble, which, while firm on its outside, was undergoing caseous degeneration in its centre, and presented all the characters of a scrofulous tumour in a state of caseation.

The *kidneys* and *suprarenal bodies* were apparently healthy, and no structural change could be discovered in the *stomach* or *intestinal canal* beyond a congested condition of the stomach near the pylorus. The *duodenum* was free from all parasites. The *pancreas* appeared to be healthy. One *ovary* was slightly cystic, but there was a total absence of any cancerous disease, or lymphatic hyperplasia in any of the parts of the body examined.

The brain was not examined, nor were the long bones laid open, nor the fundus oculi exposed; for while changes have been noticed in the marrow of the bones, and hæmorrhages found in the retinæ, in cases of idiopathic anæmia, their presence would have thrown no light upon the disease, and been but another evidence—of what we had already had ample proof—of the effect of the impoverished condition of the blood on the nutrition of the body and the structure of the arterioles.

The blood removed from the right auricle was immediately placed under the microscope, and found to present many of the characters supposed to be peculiar to idiopathic anæmia, and which I have pictured in my paper on that disease in the *British Medical Journal*, January, 1880. It contained fewer red corpuscles than normal—some few were large and tailed, and many were small, while there was no increase of the white cells.

Remarks.—A careful review of the whole case—its life-history, clinical features, and the revelations of the *post mortem* examination—leaves no doubt on my mind that it belonged to the class of blood diseases which was named by Addison "Idiopathic Anæmia."

At first sight the possibility of cancerous disease being present suggested itself, but the absence of any tumour of the stomach, liver, or glands, excluded the idea. In like manner, by exclusion, we discarded, as the essence of the anæmic condition and cachexia, splenic and lymphatic leucocythæmia, Hodgkin's disease (lymphadenoma), scrofula, chlorosis, and anæmia due to morbus Brightii, or suprarenal disease; and it was only after all other possible causes were excluded that the case was pronounced one of “idiopathic anæmia”—an opinion which could only be arrived at after several observations had been taken by examination. Owing to the patient's weak state these examinations had to be of the briefest nature.

Among the symptoms, excluding those of, and directly due to, anæmia, to which particular notice may be directed, is the occurrence of the febrile disturbance, the maintenance of adipose tissue, and the condition of the urine.

Although by no means peculiar to idiopathic anæmia, pyrexia of intermittent course, and of unequal degree, is a symptom very frequently present.

The urine, again, has been noted to be of a deep clear colour, and to become more pronounced on the addition of nitric acid. This indicates, probably, a destruction of the hæmoglobin of the blood, and by this feature the disease is distinguished from those in which the blood-making function is arrested or in abeyance—*e.g.*, phthisis, starvation, &c.

Ecchymoses have been observed in the skin in some few cases, Dr. Pye-Smith* tabulates but seven out of one hundred and two cases, and, as occurred in my case, the bleeding is usually but slight and punctiform.

The diagnosis of idiopathic anæmia to which I inclined during her life became absolute when the *post mortem* revealed the complete absence of any organic disease which could be deemed adequate to produce such a profound state of bloodlessness and debility. The morbid anatomy of this variety of anæmia may be simply stated to be either of an entirely negative character, or else that consequent on the anæmia, since to this latter category belong the punctiform hæmorrhages on the skin, the mucous membrane of the mouth or stomach, and on the retina, the changes noticed in the marrow of the long bones, and the tabby mottling of the muscular structure of the heart.

* Report on a case of “*Idiopathic Anæmia*” of Addison. Guy's Hosp. Reports. Vol. XXVI.

ART. III.—*Remarks on Hernia and Intestinal Obstruction.* By J. ROCHE, M.D., Q.U.I. (Kingstown, Co. Dublin).

WHEN a portion of the contents of any of the compartments of the body protrudes through the walls or partitions, medical men recognise the abnormality by the name of hernia. The usual varieties met with in order of frequency are—protrusion through the inguinal canal—oblique and direct, through the crural ring, through the umbilicus, through the obturator foramen, and through the diaphragm, also through the external wall, in case of wounds or extreme emaciation. If the protruded part cannot be returned to its natural location the hernia is termed irreducible, and when the extruded portion becomes inflamed and the bowels obstructed it is called strangulated. The tumour is then tender, tense, and oftentimes swollen. The causes of hernia chiefly are—1. Patency or inefficient closing, in post foetal life, of openings which are appropriate to foetal life; 2. Weakening of the impedimental tissues in the defective parts; 3. Opening of the parietes by wounds or injuries; 4. Straining and shaking (as in jumping or riding) the enclosed viscera. An excess of mesenteric ligament has been assigned as a predisposing cause by Lawrence. This is more than doubtful. It has been observed that wherever a wound of the external walls has been made the restraining ligaments have been in every case sufficiently long to allow protrusion, and therefore it may be concluded that they do not in any instance offer a satisfactory check to hernia recurring. Nevertheless, in the proceeding called the taxis it is advisable that gravity and the traction of the ligaments should be made to assist position and medicaments, so as to aid in reduction. The principal causes of strangulation are—1. Accumulation of gases and fæces in the extruded part of the intestine; 2. Convolvulus or twisting due to peristaltic action or to manipulation; 3. Constriction by bands of lymph; 4. Extensive adhesions; 5. Paralysis of gut; and 6. Intussusception. It is manifest from the inelastic and non-contractile nature of the medium through which the hernial protrusion occurs that there is nothing like an active tightening of the canal or rings which bound it. The absence of an impulse communicable to the hand on coughing shows that the intestine is so strangulated that communication between the abdominal and hernial parts is cut off. The bearing in mind of these facts is of much importance for the treatment that will be suggested further on. When the

contents of the protrusion do not include intestine, but are made up of other organs, the symptoms are those of inflammation of the contained organ, and of a foreign body in the site affected. The symptoms of strangulated hernia are those of obstruction of the bowels, more or less according to the organ strangulated, pain in the hernial tumour and at the umbilicus, vomiting, thirst, and, if not relieved, peritonitis, gangrene, and death.

When strangulated hernia has not been found reducible by the taxis, and an operation has become necessary, almost invariably fluid from peritonitis in the sac and fæcal matter and gas in the involved intestine have been met.

It is well known in surgery that the chances of successful recovery greatly depend on the state of the hernial tumour and the extent of manipulation required to reduce hernia; besides, as the connexion between the abdomen and inguinal canal is barred, as indicated by the impulse of coughing being not communicable to the hand, it follows that there is great danger of rupturing or contusing the protruded organ when striving to return it by the taxis, and even when restoring it by herniotomy as at present practised. This consideration will apply to all situations. [N.B.— The presence of a communicable impulse at coughing indicates that there is a portion of bowel in the tumour which has free open connexion with that in the abdomen, and the passage of some stools shows that there is an emptying out of the part below the stricture, and that the strangulation is only partial, or perhaps embraces the omentum and not the intestine.]

The advantage of Dr. Laffan's proceeding, as published in the *Medical Press* of May 7, 1884, in Case 2, and recommended by Dr. Bryant some years ago, will be apparent. By tapping the tumour and reducing the distension, taxis has been successful. I may mention, at the risk of being considered egotistic, that I have been convinced since 1870 that tapping with a small trocar and canula and letting off fluid ought to be done early and freely in many cases of bowel obstruction and hernia. In that year the staff surgeon of Hyderabad, Dr. William Nolan, at present Superintendent of the Lunatic Asylum, Colaba, Bombay, had a patient—an Ordnance Sepoy—suffering from obstruction of the bowels brought on from eating melon. The fruit fermented in his gut, distending it, together with the belly, enormously. Every ordinary method was tried—sulphates, calomel and opium, croton-oil by the mouth, enemata of soap and water, castor-oil and turpentine, and air

forcibly thrown up by the long tube. Faradisation was used, and all to no good purpose. Dr. Nolan was asked to permit tapping of the man, as the case was hopeless and in a sinking condition, as I had seen cattle who had suffered similarly after clover-grass vented and cured. After some deliberation permission was obtained, and, adopting the veterinary rule to strike the most tympanitic and prominent part, I plunged a hydrocele small trocar and canula. The trocar having been withdrawn, there was let escape a quantity of foul gas. The patient obtained much ease and consoling hope from the operation. Dr. Nolan took advantage of the improved condition, and endeavoured to have the bowels moved; however, he was not successful, the flatus had accumulated again the next morning, and the vomiting had returned in the night. I tapped him again, the gas was more foetid, and though there was much relief, hope was not so assuring. For the third time I vented him in the forenoon, the interval being shorter than on the former occasion. He succumbed to peritonitis and gangrene, and at the *post mortem* examination in the afternoon it was plainly made manifest to Dr. Nolan and myself that the operation of tapping or venting the intestines is a legitimate proceeding. The cæcum, the ascending, transverse, and portion of the descending colon, were embraced in a convolvulus which, if removed, immediately came back; where they embraced each other there was complete gangrene. The included part of the colon was abnormally distended from foul air, and contained some decomposing melon. Its wall was quite transparent, in which were the three punctures of the trocar, and no exudation or inflammation, and only a slightly congested patch the size of a freckle to indicate the operation.

There were all the conditions present of an experiment from which might be drawn valuable conclusions—viz., an attenuated intestine wall with thinned mucous membrane and anatomical healthiness of the portion punctured, without any sign of the slightest injury having been done by the operation; so that tapping may be performed in obstruction of the bowels and in hernia without the least compunction; and thus by diminishing the tension of the gut the chance of the taxis in the one case and of medical treatment in the other is facilitated and rendered better.

The operations for the relief of strangulated hernia may be divided into two classes, according as the incision is made over the fundus or over the neck of the tumour; the former was generally

practised till recently, and the latter has received in Dublin the name "dissection operation."

Scientific surgery will concede that this operation is the preferable one of the two in the inguinal and umbilical forms; besides, the cause of the constriction may be in the sac and it is not desirable that the tumour should be returned with the stricture if it were caused by a band of lymph, leaving the patient still with obstruction of the bowel. It would be an advantage, for correspondence sake, were the old operation called "the proximal" and the new one "the direct." In the operation for hernia, the desiderata are—impediments to the normal action of the gut should be removed, as little force as possible should be used with the tumour, and the cure should be a radical cure, so that there should not be a relapse, which can be done more easily and effectually by the direct than by the proximal operation. Wherever adhesion is required it is axiomatic "to attend to the deep parts," and after the direct operation these can be held together by quill or pin sutures, and vessels and viscera may be avoided more easily than in the operations of Wutzer and Wood, as done in inguinal hernia.

The modifications proposed by some authors of invaginating the fundus of the sac in its neck to occlude the canal is liable to the same objection as Wutzer's and Wood's operations. Twisting the sac in rope fashion merits more emphatic condemnation on account of the difficulty of ascertaining as to how far upwards the twisting exerts its influence, for the twisted tissues may constrict a portion of gut, or include a piece of omentum, and the liability to sloughing and inflammation, which rough contusing of parts would induce, is made greater.

OPERATION ON A NEW SYSTEM FOR HERNIA.

The interest which the several societies in London, Dublin, and the provinces have attached to hernial papers in the current session, is a warrant that the treatment is not definitely decided or classically fixed in any of its phases. The number of cases that die in a short period after the operation for hernia of either peritonitis or obstruction of the bowels, the danger to life inflicted by much manipulation of the hernial tumour, and the almost physical impossibility of not contusing or even not lacerating the tumour by passing the finger or a director and knife up a passage that is already made too tight on its contents, are constantly recognised by experience. Again, herniæ take place usually through tendinous, ligamentous, bony openings,

or some opening bounded by a combination of those structures, little vascular, and therefore difficult of closure; it is for this reason a misfortune to enlarge such a viaduct by cutting, if it can be avoided. Aspiration of the tumour by tapping will assist in obviating contusion or laceration where it will not be successful in assisting the taxis; and I advocate that it should be invariably performed when the tumour is tense, and that it should be done at an early stage. In the effort to force back the tumour there is danger of rupturing at the neck of the hernia; the cover of any pneumo-fluid contents is liable to burst at the weakest part and where the resultant of the forces applied acts, and this is at the neck of a conical or cylindrical shaped bag, which is rendered more liable still by a gangrenous or inflamed state following strangulation. Another grave defect in the heretofore practised proceedings is that all attempts at occlusion of the chasm are made at the distant side of the wall to that on which the pressure which caused the rupture, and is likely to re-cause it, exists.

If the contents of the abdomen be called pneumo-fluid of less specific gravity and greater elasticity than water, it will be perceived that a small resistance offered at the side of the wall next the pressure will be much more effective in preventing the outflow than a vastly greater amount at the distant side—a fact established in hydraulics. For the purpose of overcoming these defects I venture to ask the profession to adopt a new system of operating in hernia.

I propose that for umbilical hernia a vertical section shall be made just outside the seat of tightness, and that for inguinal—oblique and direct, crural and obturator—the cut shall be made above, and almost parallel to, Poupart's ligament—that, in fact, the abnormal state of things should be combated *ex tergo* instead of *ex fronte*. By this means the hand will impinge on a sound and not on an inflamed or sloughing part of intestine, there will be less liability to laceration and rupture, and the adhesions which have caused the obstruction of the bowel can be more easily and securely broken down. Moreover, if enlargement of the so-called stricture be found necessary it can be done better from the pressure side than from the tumour side. I propose that the enlargement may be effected by an expanding forceps, whose blades are smooth, slightly curved and distensible with force to the handles. By such action wounding of important structures will be avoided and the expansion of the opening or so-called stricture will take place at the weakest point, and not as in the old operation. In oblique inguinal hernia

the tumour components will be between the operator and the epigastric artery; in direct the artery will be outside them; in crural, direct, inguinal, or obturator, the incision, if kept close to the ligament at the pubic end, will avoid the epigastric artery and the important vessels which lie adjacent. The wound can be effectually closed by pin or quill sutures; and in umbilical, inguinal and crural hernia they can be inserted so as to close the hernial opening, and thus effectually accomplish the radical cure. One lip of the wound being highly vascular, healing will be facilitated. If the bowel be found gangrenous or atrophied an artificial anus can be made at the same incision, and there will be no risk of ligaturing important organs as exists in Wutzer's and Wood's operations. I propose to call the proceeding "the distal operation" for hernia.

The objections which may be advanced against the distal operation are—1st. There is already an abnormal opening into the abdomen, and it is not advisable to make another if the existing one will suffice for our object. 2nd. The risk incurred by exposing a large serous cavity, and of wounding large vessels and the intestines. 3rd. The greater difficulty of performing the distal operation—(a.) As the object should be to give the patient the greatest chance of life and comfort, and the aim should be to meet in the most efficient way every probable and possible contingency; these will be attained by the distal operation, and not so surely by either of the other two methods. (b.) The risks to life and comfort are not greater in exposing the peritoneal cavity than they will be if a portion of intestine, with adhesions or bands of constricting lymph be returned through the existing passage, which is proved by the large mortality amongst strangulated hernia cases, within a short period from obstruction or peritonitis. (c.) The difficulty of the operation should be no bar to its performance, and especially if, during execution, numerous vantage points be seized for overcoming the immediate and mediate effects as well as preventing a recurrence.

THE RADICAL CURE OF NON-STRANGULATED HERNIA.

As there is not immediate danger threatened in non-strangulated hernia, the reasons for performing an operation are different and not so urgent. The radical cure is done for the purpose of removing an inconvenience, and of anticipating strangulation. Several methods have been adopted. Wutzer's, which may be denominated the caulking process, and Wood's, which is an ingenious plan, have both only met with an indifferent success. Wood

draws the pillars of the ring together by a ligature. Spanton, of Hanly, has devised an instrument for this purpose. There are others who tie or twist the sac so as to obtain a barrier to the tumour re-forming. The evil results that have sometimes followed are ligature of the spermatic vessels, and as a consequence, necrosis of the testicle and peritonitis or cellulitis from the twisting or plugging, irritating the peritoneum and acting as a foreign body. The twisting may even entangle the intestine and strangulate it so as to cause obstruction. A proposal has been made at the other side of the Atlantic to inject some irritant fluid into the sac so as to set up inflammation and adhesions. The objection to this will be that the fluid may pass into the cavity of the abdomen, as from the nature of the part the anatomical continuity will favour such an event. As an improvement on this latter, it would be well to apply a piece of lint, saturated with acetum cantharidis, in the length of the sac, for a few seconds, the irritation and inflammation will be thus limited, and with pressure and rest the chances of occluding the passage will be many; the proceeding would be equally applicable to femoral hernia as to inguinal. I have seen exceedingly bad fistulæ closed by such means.

There is yet an operation which is done in veterinary surgery, a modification of which might be of use to man. In umbilical hernia of the horse a pin, or two, is inserted superficially, and under the ends of them are placed parallel pieces of wood and tied together so as to act as a clamp; the pins urge the clamp to make deep-seated pressure. An equivalent disposition can be effected in the human subject for umbilical and inguinal hernia by substituting for the pieces of wood strong and long pins, inserted deeply at right angles to the short and parallel to the long diameter of the neck of the hernia. By tying the ends together, the opening through the wall, and the channel through which the hernia protruded, may be obliterated. The superficial pins are used to draw out the integument, and to direct the large pins deepwards.

OBSTRUCTION OF THE BOWELS.

The symptoms are—constipation, pain at the umbilicus, vomiting, tympanites, gastritis, peritonitis, gangrene; death. Causes—Impacted fæces, intussusception, convolvulus, adhesions, stricture from bands of lymph, atrophy and paralysis of intestine. Treatment—Enemata of castor-oil and turpentine, soap and water, magnes. sulph. thrown up by the long tube, stuping and friction, faradisation,

calomel and opium, or belladonna—the purgatives which act through the muscular coat in intussusception, convolvulus, and paralysis; in impaction, stricture, and adhesions—those which act through the mucous coat and increase watery discharge. Forcible injection of water, and even air, have been followed by a favourable result. When the tympanites is extensive, tapping should be performed. Removing the cause of the great distension from the intestines will facilitate the action of drugs on the walls. I would suggest that some castor-oil and turpentine might be injected into the intestinal canal by the canula. If gas has escaped freely, the canula is in the hollow of the gut, and there can be no danger of injecting into the peritoneum. The advantage would be decided in a therapeutic point, as there would be assurance that the medicine would not be vomited ere it arrived adjacent to the seat of mischief. Abdominal section should be more generally and early performed. I leave to experience the determination of the value of the foregoing remarks, and conclude by adding that the surgeon, like the skilful strategist, should make an economic disposition of his resources, having carefully noted the evils he has to overcome; and not only should he weigh thoughtfully in his mind the apparent difficulty, and so arrange his operations that he may subdue them with the greatest ease and least loss, but he should make provision for all eventualities and any miscarriage that may take place at every step; and he should apply his reserve so that he may be able to retrieve as far as possible a partial defeat. I have striven in this article to estimate the gravity of hernia and bowel obstruction, and, with the hope of combating it, to give some new suggestions which have been dictated by the recollection that, though the best result may be obtained, there are several accidents and misfortunes which may arise, and which might be disastrous if not checked. If these hints do not contribute to make success easy and complete, I trust that they will assist in rendering failure less frequent, and contingent complications less formidable.

RESORCIN IN CHANCRES.

LEBLOND AND LISSIAUX (*Annales de Gynécologie*) recommend resorcin as a better application to soft chancres than iodoform, not only on account of its freedom from smell, but also because of the rapidity of its action. Whilst the healing of a chancre with iodoform occupies, on an average, 38 days, the resorcin has the same effect in 23 days. It is used in solution (5–20), or in the form of powder.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON VIVISECTION.

1. *Physiological Cruelty ; or Fact v. Fancy. An Inquiry into the Vivisection Question.* By PHILANTHROPOS. London: Tinsley Brothers. 1883. 8vo. Pp. 156.

2. *Vivisection : in its Scientific, Religious, and Moral Aspects.* By E. D. GIRDLESTONE, B.A. London: Simpkin, Marshall, & Co. 1884. Pp. 68.

1. IN the mass of vivisection literature which it has been our lot to read through, we have not met an abler treatise than that whose title stands at the head of this notice. In "*Physiological Cruelty*" will be found a well and temperately written essay, in which the author looks fairly at every side of his subject, in which the statements are accurate, and the reasoning conclusive to any unprejudiced mind. Having defined the object of his book, he inquires what is pain, and shows that many of those signs which are generally considered as indicative of pain are fallacious, and adduces powerful reasons to show that the lower animals are not capable of suffering such pain as that which is felt by men. In the next chapter cruelty is defined as the wanton or excessive infliction of pain. 'The mere infliction of pain is not cruelty, and if the results are the attainment of a good which both quantitatively and qualitatively overbalance the evil of the pain, then the infliction of such pain is justifiable. It is next shown that "to make painful experiments upon living animals lies within an universally recognised right over them, and is not wrong in itself, but depends for its morality or immorality upon the circumstances and motives of each particular act." In considering the question—What is vivisection? it is shown that a great deal of physiological research is not carried on by vivisection at all, and the very small amount of pain inflicted yearly by all the vivisections performed in Great Britain is contrasted with the vast good to be hoped for from physiological

research, and with the exaggerated and sensational writing which has been expended on it by the anti-vivisectionists.

In the chapter on the relation of experiment to physiology it is pointed out that this relation is essential, that physiology rests entirely on experiment, and that every advance in physiological science has been made by this means:—

“We have now gone in order through six of the principal branches of physiology, and we have found that in each the most important discoveries have been made by means of experiment, and that to it we owe the accuracy and certainty of whatever knowledge we possess. It is impossible to lay too much stress upon this point, for it is the stronghold of the case. Those who defend physiological experiment as an absolute necessity to medicine do so, not because this or that drug has been discovered by its means, this or that operation perfected through its practice—they defend it because without it medicine is based upon ignorance, and every doctor is a charlatan patching at a wonderful mechanism of which he knows nothing—they defend it because it is the foundation upon which physiology, as a science, stands. The pseudo-sciences rest upon theorising, guess-work, and empiricism; a true science rests upon experiment. If physiology be deprived of this necessary foundation, it will be degraded through no fault of its disciples; it will not fall to pieces, because that which has been won cannot be taken away; but it will be unable to encroach any further upon the morass of human ignorance, because forbidden to lay a firm footing for its advancing tread. But, after all, interests differ. There are some who do not much care for that morass to be invaded. ‘Quand on veut dessécher un marais, on ne fait pas voter les grenouilles.’”

Since a rational medicine rests on physiology, everything which improves our knowledge of the latter tends to advance the practical arts of healing. But besides this indirect advantage which medicine has gained from experiments, it has benefited directly, and that in many and striking instances.

In the chapter on legislation past, present, and possible, the absurd condition of the law as regards cruelty to animals is well shown, and characterised as having the great merit of being peculiarly British—

“That is to say, it is not trammelled by any principle previously laid down, or hindered by any consideration of reasoning or consistency. To found a new law upon a distinct principle, from which its enactments develop logically, has a Continental flavour about it displeasing to the national mind, and reminds us in some way of centralisation. We prefer

to make a fresh regulation every now and then, when it occurs to us, or when somebody makes a fuss, and it is necessary to do something. In this way a state of things has come about in which it is penal to use domestic animals in any way cruelly, but in which anyone may torture wild creatures in whatever fashion he likes, *provided it be not for scientific purposes*; while any invertebrate animal is given up to whatever anyone chooses to inflict, for any or no reason. The older law against cruelty to animals, commonly known as Martin's Act, applies only to those which we call domestic. It did not therefore need the Act of 1876 to protect horses, asses, and mules, cats and dogs, from cruelty; while now that it has been passed, an otter may be killed by inches to amuse a crowd of men, or boys may roast a rabbit to death for fun; but if there be a serious scientific reason for giving pain to a rat, the operator is a criminal unless he is shielded by a fence of licenses and certificates. Thus Mary Ann, the housemaid, may kill all the mice in the house with the horrible poison of phosphorus, and no one will interfere with her; but if Mary Ann's master, the surgeon, injects snake-poison into one of them in hopes of discovering an antidote for it, he becomes liable to a £50 fine. And if Mary Ann, being tender-hearted, and disliking smells behind the wainscoting, has recourse to live traps, and is then puzzled to know how to dispose of her prey, she may give it to the stable-boy to amuse his terrier with, but she must not give it to the surgeon to experiment on. Nothing makes it criminal to give pain to a wild animal *except* having sufficient justification. In a new sense, *qui s'excuse s'accuse*. Briefly, the case stands thus:—You must have a good reason for hurting a tame creature; you must *not* have a good reason for hurting a wild creature; and you need have no reason at all for hurting an invertebrate creature.”—(Page 83.)

In the working of the Act of 1876 the chief defect lies in the absolute and irresponsible power wielded by one man, the Home Secretary. It is urged that his professional advisers ought to be, like the Queen's, responsible for all technical points, and that licenses ought to be granted and certificates allowed, as a matter of course, to properly recommended applicants. In case of abuse, the Secretary has always the power of withdrawing them. It is further demanded that licenses should not be necessary for inoculation experiments, and injections under the skin, of poisons; and finally, that teachers' licenses should not require renewal every year, but should hold good, unless in case of abuse, for the entire periods of their incumbency:—

“If the whole subject were to be considered *de novo*, the field cleared of all existing legislation, and a new law passed grounded on reason and

principle, then I should put forward very different proposals—then I should urge the equal claim of all sentient creatures to be protected from human cruelty, and saved from needless suffering, while admitting the superior claim of men to their use for his own advantage. And I should propose that it be a legal offence to ill-use, cruelly treat, or torture any creature whatever. This broad principle being laid down, special provision should be made for the various cases in which it was necessary or allowable to inflict pain upon animals (among which scientific experiment would be one), and the needful conditions for each should be specified. But the day of such rational and consistent law-making as this seems very far away.”

In conclusion, we cannot too highly recommend this essay to everyone interested in the much-vexed, and in many respects difficult, question of vivisection.

2. Mr. Girdlestone's pamphlet is a paper prepared for, and in part read before, the Clifton Conversation Club. It is divided into six chapters—1. The comparative insensibility of brutes to pain. 2. The practical utility of vivisection. 3. The use of animals defended on Biblical grounds. 4. The use of animals defended on moral grounds. 5. The example and teaching of nature in regard to vivisection. 6. On the charge of demoralisation in connexion with vivisection.

The essay is written in a lively and animated style, and is valuable as the outspoken opinion of a layman who has no interest in the matter except the desire that truth and common sense should prevail over falsehood and bigotry. The book will well repay perusal.

Microscopical Morphology of the Animal Body in Health and Disease.

By C. HEITZMANN, M.D. London: Trübner & Co. 1884.
Pp. 849.

THIS large and handsome volume, which contains, as we are told, the results of ten years' intense labour, is the work of twenty authors, and consists, for the most part, of papers already published, and now, together with much new matter, arranged into a systematic treatise. The greater part of the text is the work of Dr. Heitzmann himself, and the remainder has been written under his direction by his pupils.

We shall endeavour to give a very brief outline of the view

which Dr. Heitzmann holds on the constitution of the body and its tissues, but our space makes it impossible for us to follow him into the detailed account of the structure of each part separately. We may say that of reagents he employs chiefly chromic acid and chloride of gold; that the tissues are examined in sections, made by hand and mounted in dilute glycerine, and magnified usually from 600 to 2,000 diameters; that the drawings, of which the volume contains 280, are made without the aid of a camera—of their technical beauty we can speak in the highest terms.

Pròtoplasm is a substance which differs in structure according to its age:—

“The shape of the youngest protoplasm is that of a compact lump of living matter, with the following properties:—It is homogeneous, has a yellow tint of varying intensity and shade, a considerable lustre, and admits of being stained red by a solution of carmine, and violet by a solution of chloride of gold.”

At this stage no reticulum is visible. Soon vacuoles form, in which fluid accumulates, and the living matter is reduced to a framework. The vacuoles in part coalesce, and their walls are torn through. The framework of living matter then becomes a network, and the thickenings at the nodal points of this are the granules so well known as occurring in protoplasm. At this stage, then, the protoplasm consists of a reticulum of living matter with swellings at the nodal points, the meshes being occupied by a non-living fluid material; and this is the structure of fully-developed protoplasm:—

“The more coarse, yellow, and shining, and the more densely arranged the points of intersection of the living reticulum are, the nearer is it to its youth; on the contrary, the more delicate, devoid of colour and lustre, the granules are, the more advanced is the age of the protoplasm. That, under certain circumstances, the living matter in the protoplasmic lump, by endogenous formation, reproduces its own kind, is proved by observations of older amœbæ. Here the coarse granules are newly-formed living matter in a juvenile condition.

“With this explanation we can easily understand the differences of age in the elements of tissues described above. The originally homogeneous lump of protoplasm, with increase of size, is transformed in its peripheral portion into a network; whereas the central portion, the nucleus, remains homogeneous. Next, a differentiation (*sic*) into a framework, and in turn into a network, takes place in the central lump, the nucleus, so as to leave smaller compact centres, the nucleoli. This condition furnishes the scheme of the ‘cell’ of the authors.

"At last the differentiation (*sic*) into a network has involved the whole protoplasmic body. At this stage no nucleus, and, later on, even no nucleolus, is perceptible, for the whole body is split up into a reticulum, with coarser and finer points of intersection, and this condition immediately precedes the formation of a basis-substance.

"The living matter passes through these stages not only in the normal progressive development of all tissues, but, as I will demonstrate later, also in the process of inflammation, though here in a reversed manner."—(Page 52.)

From this it will be seen that the author holds firmly to the reticular structure of protoplasm in its fully-developed condition, and believes that the reticulum of the nucleus is continuous with and of the same nature as that of the surrounding protoplasm. Not only this, but he breaks completely with the cell theory, which supposes that the body is composed of a number of separate elements. He considers that this theory has been productive of vast mischief, and is, both in the case of plants and animals, to be utterly rejected. For the whole body is traversed by a continuous network of living matter or *bioplasson*, and what we consider cells, or what he calls *plastids*, are merely "nodes of a reticulum traversing the tissue":—

"According to my observations, we have not to deal with cells as form-elements, either in the fluids or in the tissues of the animal body, but only with living matter, varying in its appearance from the just perceptible granule to the bulk of the body of the largest animal. Single lumps of living matter may either look homogeneous, or show a net-like arrangement, whereas the body of an animal is a continuous mass of living matter or network arrangement, and contains fluids in blood and lymph vessels, in which there are suspended isolated bodies, either homogeneous or reticular in structure, as analogous to the granules which float in the vacuoles of an amœba. The difference in the aspect of the tissues depends on the presence of a lifeless basis-substance only—a derivation of the lifeless 'protoplasmic fluid'—while the living matter of the tissues exists mainly in the reticular stage, and is inter-connected without interruption throughout the body."—(Page 56.)

Now, this structure of the body may or may not really exist. If we were to trust the author's drawings, it is as easy to see as it is to count fingers at the length of the arm; but it must be remembered that even if it be admitted that all European microscopists are "prejudiced by the teaching of older masters," and that their opinions are consequently valueless, yet even in America the

views of Dr. Heitzmann are not universally admitted, and that the seven hundred enthusiastic pupils who have studied under him do not represent the entire of the biological science of the New World; and if we may judge by the specimens of their work contained in the volume before us, they show far more evidence of being prejudiced by the views of their teacher than is commonly the case in this effete portion of the globe. But we think that on both sides of the Atlantic it will be admitted that the far-reaching conclusions which Dr. Heitzmann draws from his researches, when he abandons the observation of facts and launches out boldly into assertion and hypothesis, are, to say the very least, premature. The following instance will give an idea of the extravagances into which his over-confident enthusiasm too often leads him:—

“The amount of living matter within a limited bulk of a plastid varies greatly in different individuals. *It is obvious* that what is called a healthy or vigorous constitution is based upon a large amount of living matter in the body, the new growth of which in morbid processes is very lively; while a strumous, or scrofulous or phthisical (!) constitution *must be* caused by a relatively small amount of living matter, the new growth of which is scanty in morbid processes. In other words, a plastid will exhibit coarse granulations, or it will be almost homogeneous-looking under the microscope, owing to the large amount of living matter in strong individuals of good constitution; while a plastid taken from a person with weak or strumous constitution will be finely granular, as but little living matter is present in it.”—(Page 58.)

In hundreds of cases, from an examination of pus, generally in urine, Dr. Heitzmann has been able to tell, without seeing the patients, whether they were of good or bad constitution, and in all these cases he never made a mistake. So it is “an accomplished fact” that an examination of the white blood corpuscles reveals more of the general health of a person than can be told by the naked eye or by physical examination. The following passage gives a touching instance of the faith and enthusiasm Dr. Heitzmann has succeeded in arousing in his disciples:—

“Life insurance should be based upon microscopical examination as well as on percussion and auscultation. Marriages should be allowed, in doubtful cases, only upon the permit of a reliable microscopist. Last season a young physician asked me whether I believed in the marriage among kindred. He fell in love with his cousin, and so did the cousin with him. I examined his blood, and told him that he was a ‘nervous’ man, passing sleepless nights, and had a moderately good constitution.

The condition being suspected in the kindred lady, marriage was not advisable, for fear that the offspring might degenerate. So great was his faith in my assertions that he gave up the idea of marrying his cousin, offering her the last chance—viz., the examination of her blood. This beautiful girl came to my laboratory, and, very much to my surprise, I found upon examination a first-class constitution. The next day I told the gentleman, ‘You had better marry her.’”—(Page 66.)

Surely this holds out a brilliant prospect for the histologist. For, not only before marriage, but prior to engaging in any enterprise or speculation, every prudent man will have his bioplason examined by a “reliable microscopist.” We think we may safely leave criticism on all this to our readers.

Notwithstanding many extravagances such as we have referred to, the work before us is one in which every histologist will find much that is interesting and suggestive. The author enjoys many of the qualities which make a great investigator. Possessing great technical skill, untiring industry, unflinching courage, and unwavering belief in himself, he has evidently the gift of powerfully impressing those associated with him, and has thus succeeded in founding a school of whose work the volume before us is the outcome. While fully admitting that it possesses many and great merits, we cannot but think that many of the facts put forward as completely established are still much in need of revision and confirmation, and furnish a very insecure foundation for the lofty superstructure of deductions and reasoning which the author has raised upon them.

The Gold-headed Cane. Edited by WILLIAM MUNK, M.D., F.S.A.; Fellow and late Senior Censor of the Royal College of Physicians. London: Longmans, Green & Co. 1884. 8vo. Pp. 246.

SOME years ago Dr. Macmichael, then Registrar of the College of Physicians, wrote a very readable book under the above title. It gave some account of the lives and professional relations of five celebrated physicians who successively carried the Gold-headed Cane, upon the head of which their arms were engraved. Many stirring and interesting scenes occurred under the eyes of this celebrated cane, and the volume was of considerable value as bearing upon the medical history of the century and a half covered by the lives of these eminent men—Dr. Radcliffe, Dr. Mead, Dr.

Askew, Dr. David Pitcairn, and Dr. Matthew Baillie. The cane was presented to the College by the widow of Dr. Baillie, and is now preserved in the Library of the College, where it has attracted much notice from visitors. Dr. Munk has added to Dr. Mac-michael's sketches brief notices of three later Presidents of the College—Sir H. Halford, Dr. Paris, and Dr. Mayo.

The book conveys, in a pleasing, gossiping sort of way a good deal of collateral information on the changes which, in the course of time, have been wrought in the medical profession. Opinions may differ as to whether Dr. Munk, from his stores of learning, would not have done better to have written an independent volume instead of adding a new piece to an old garment.

Voice, Song, and Speech : a Practical Guide for Singers and Speakers.

By LENNOX BROWNE, F.R.C.S., Edin. ; and EMIL BEHNKE.

London : Sampson Low, Marston, Searle and Rivington. 1883.

8vo. Pp. 322.

THOUGH the work before us is primarily intended for singers and speakers, the subject with which it deals is of sufficiently great interest to all who have to deal with the treatment of the throat in general, and of the general health in its bearing on the integrity of the vocal organs, to justify us in calling attention to it in these pages.

The book being chiefly intended for voice users, and not for the medical profession, we find in its pages but little reference to throat diseases and their treatment. One chapter is devoted to "Ailments of the Voice User," but the authors have treated this part of the subject in a popular way and with but little reference to the sphere of the specialist. They have made an exception in speaking of the evil effects of enlargement of the tonsils, and we think wisely, because even among medical men there is still a distrust as to the propriety of removing them—a distrust too often based on nothing more than an absence of experience as to the operation and its effects. "Of the primary value or use of these glands," say the authors, "there is considerable doubt, but it is certain that at a very early age, and in the great majority of instances, they exist only to become diseased ; so much so that a very eminent physician has stated that, were he to play the part of a Frankenstein, and endeavour to create a man, he would omit the tonsils" (p.278). Again: "There is no argument whatever of any scientific value to be advanced against the measure (excision of the tonsils), and there is the very

direct evidence in its favour of many of our great singers. Louisa Pyne, Patti, Lucca, and others, have undergone the operation, not only without injury, but with actual benefit.

The book opens with a chapter entitled, "A Plea for Vocal Physiology." The strong point urged here is, that by far the larger proportion of failures in singers and speakers is due to an ignorance of the simplest laws of voice-production, a knowledge of which would have easily prevented those evil results which it is often so difficult to cure. In the training of the voice we are behind the ancients. "The discipline for the formation and improvement of the voice among the Athenians was so comprehensive that, as we are informed by Roman writers, not less than three different classes of teachers were employed for this purpose—viz., the *vociferarii*, *phonasci*, and *vocales*. The object of the first class seems to have been to strengthen the voice and to extend its compass; the office of the second to improve its quality, so as to render it full, sonorous, and agreeable; while the efforts of the third, who, perhaps, were considered as the finishing masters, were directed to the proper intonation and inflection" (quoted from "The Philosophy of Voice and Speech," by James Hunt, 1858).

A perusal of the whole book shows that no voice user should be satisfied unless he has gained a good knowledge of the physiology of the organ on which he has to depend. The next chapter deals with the laws of sound bearing upon the voice, and various musical instruments are shortly described in order to explain the inherent qualities of tone produced by different means. Fifty pages are devoted to an account of "The Anatomy and Physiology of the Vocal Organs." In order to popularise this portion, English names are given in place of the better-known technical terms. Many of the terms so substituted, we think, would have been better left in their original language. To call the larynx the voice-box, the cricoid and thyroid cartilages, and the epiglottis respectively, the ring or foundation cartilage, the shield or tension cartilage, and the lid or cover cartilage is almost puerile. Following out the same method, the arytenoid cartilages become the pyramids, and the intrinsic muscles of the larynx are called the "*shield pyramid muscles*," the "*ring shield muscles*," the "*back ring pyramid muscles*," the "*side ring pyramid muscles*," and the "*pyramid muscle*," a system of nomenclature which adds nothing in the way of simplifying the subject, but helps to make in the mind of the amateur "confusion worse confounded." Of the voice as a musical instrument, three

theories are given—the string theory, the flute-pipe theory, and the reed theory. Each theory is shown to be untenable as a means of explaining the mechanism of the human organ. Reed instruments approach most nearly to it; but the vocal ligaments, as pointed out by Helmholtz, “have the advantage over all artificially-constructed tongues of allowing the width of their slit, their tension, and even their form, to be altered at pleasure with extraordinary rapidity and certainty.”

We next come to the hygienic aspect of the vocal apparatus, and the greater portion of this part of the book is devoted to the hygiene of breathing. The evil effects of clavicular or collar-bone breathing are insisted on, a method of breathing which many singers resort to from habit, and without any knowledge that the habit is a bad one. “We have both,” say the authors, “for many years been enforcing the importance of filling the chest primarily at its base by descent of the midriff, circumferentially by rib expansion, and only in the very slightest degree in very exceptional circumstances by any elevation whatever of the collar-bone.” The lower portion of the thorax is especially designed by nature to allow of the greatest amount of expansion, and therefore to hold most air during respiration, and yet this is the very part selected by ladies for encasement in close-fitting, unyielding corsets. The consequent deformity of the ribs and underlying organs “occurs so gradually during years of growth, that the wearer is generally quite unconscious of having disfigured herself; and I have never yet met with a lady who owned to having a tight pair of stays.” According to the writers the effect of tight lacing on the vital capacity is greater than is generally supposed. “That the heavy clothing of ladies makes a great difference in their respiratory power may be proved by trying it first when the subject has on her shoulders the heavy velvet bugle-covered or seal-skin mantle, and then without it.” There will always be a gain in the latter case of ten or fifteen inches; but, if the experiment be made even where to the male eye the charge of *tight* lacing cannot be made, but when the corset is of unyielding material, there will be almost uniformly a difference of one-third, and an immediate regain of power almost to the full average standard when the corset is removed. These points are again referred to, and in greater detail in the chapter on “Voice Cultivation,” which is divided into five parts—(1) breathing; (2) attack; (3) resonance; (4) flexibility; and (5) registers. Under the first heading the difference between correct and incorrect

breathing is explained, and the general law enunciated that "the criterion of correct inspiration is an increase of size of the abdomen and of the lower part of the chest. Whoever draws in the abdomen, and raises the upper part of the chest, breathes wrongly." The authors then explain a system of exercises which those who have been accustomed to employ clavicular breathing would do well to study, if they wish to learn how to overcome a bad habit. Perhaps the most interesting part of the book is that which explains the mechanism of various registers. A register, according to Behnke, "consists of a series of tones which are produced by the same mechanism." The lowest register, called the thick register, is produced by vibrations of the vocal ligaments through their whole length, breadth, and thickness. As soon as the vocal cords have reached their greatest degree of tension, a change must take place in order to allow the singer to go up the scale. This is accomplished by the vocal ligaments becoming much thinner than in the thick register, and their tone-producing vibrations being confined to the thin inner edges. The change is further indicated by a reopening of the crico-thyroid aperture which had quite disappeared in the upper tones of the thick register.

When the limit of this register is reached, a new change takes place. "We now see an elliptical slit between the vocal ligaments," which slit becomes gradually reduced in size as the singer goes further up the scale. "It is, however, worthy of notice that this mechanism may be resorted to almost from the beginning of the thin register, and that even tenors may use it, and do use it in the production of the few tones just above the thick register which form the higher part of their compass as applied to modern music. But tones so produced are very poor and unsatisfactory, and they constitute what is commonly called "the falsetto voice." The highest register, formed of the highest part of the soprano voice, and called in this work "the small register," shows another mechanical change. The posterior portions of the vocal cords are now pressed tightly together, and are not seen to vibrate, but in the anterior portion an oval orifice is seen which contracts the higher the voice ascends. The portions of the vocal cords forming this aperture vibrate in a marked manner. At page 226, the description of the various voices singing through the registers is amplified, the lower thick register is compared to playing on a *double bass*, the upper thick register to the *violoncello*, the lower thin register is the *violin*, the upper thin the *viola*, whilst the small register is com-

pared to the *joy fiddle*. This description might well have been omitted, and is out of keeping with the rest of the book.

Before bringing this review to an end, there is another criticism which we feel bound to make, as the fault to which we allude is found in almost every chapter, and detracts greatly from the pleasure of reading the book. There is too much of the individuality of the authors displayed. Laudatory references are frequently made to various works previously published by the authors separately, but the climax is reached in a footnote to page 189, where a grateful acknowledgment is made of the mutual benefit which has resulted from the partnership of the authors.

This is the more to be regretted as the book contains quite enough in itself to recommend it, and to do credit to the writers.

On the Treatment of Wounds and Fractures. By SAMPSON GAMGEE, F.R.S.E.; Consulting Surgeon to the Queen's Hospital, Birmingham. Second Edition. London: J. & A. Churchill, New Burlington-street. 1883.

MR. GAMGEE has here consolidated two series of clinical lectures which have already been published. He is known as a thoughtful and skilful surgeon, and he has taught much that is useful in the treatment of wounds and fractures. In regard to the former, he has taken up a position of hostility to the Listerian method, and he informs us of his results obtained by the use of his absorbent pads. His success has been very good. There is no doubt that even without the Listerian dressings those surgeons who have learned from Sir Joseph Lister the advantages of care and precision, and strict cleanliness in the dressing of wounds, have improved their statistics immensely. But because this is so it by no means follows that his method is equalled by the many modifications of it of which we hear, or that any one of them would give us the same reduced risk over so large a field of operative surgery. We confess we are rather weary of the objections which are being so earnestly urged against the antiseptic system as formulated by Lister. We cannot say that Mr. Gamgee has broken new ground or has done much to damage the method.

The lectures on fractures are very practical, and the book contains a chapter on the materials and apparatus that may be used in treatment. Most valuable are the hints here given.

Although we cannot recommend in all cases the practice advo-

cated regarding the treatment of wounds, so long as there is a safer and therefore better one, there is much in the book that will interest and instruct the surgeon.

Das Ozon und seine mögliche therapeutische Bedeutung. Von DR. E. STABEL. Kreuznach. 1883. Pp. 35.

BINZ's experiments have shown that pure and highly diluted ozone—i.e., ozonised air, acts as a hypnotic and nervous sedative. It is known that the proportion of ozone is relatively high in sea air and in the atmosphere of brine-works, and in this pamphlet Dr. Stabel endeavours, and with some show of reason, to make out a case in favour of the tonic and restorative virtues of the saline atmosphere of Kreuznach upon the waters of which favourite resort he has already published a monograph.

New Sydenham Society's Lexicon of Medicine and the Allied Sciences. Based upon Mayne's Lexicon. By HENRY POWER, M.B., and L. SEDGWICK, M.D. Part VIII.

THE dictionary slowly wends its tedious way, and this eighth part only covers the ground between "Ded—Ect."

The printer, as usual, has done his work excellently, and there is nothing in the present part that calls for special notice.

On the Treatment of Spinal Curvatures by Extension and Jacket. By H. MACNAUGHTON JONES, M.D., M.Ch., F.R.C.S.I. & Ed.; Examiner in Obstetrics and Diseases of Infant Life, Royal University of Ireland; lately Professor in the Queen's College, Cork, &c., &c. London: J. & A. Churchill. 1884. 8vo. Pp. 127.

THE little book before us, the first of a series of essays on medical and surgical topics, from the pen of Dr. Macnaughton Jones, whose previous works on special branches of medical science are already widely and favourably known throughout the profession, contains the record of the author's matured experience in the treatment of angular and lateral curvatures of the spine by Dr. Sayre's method of suspension and the plaster-of-Paris jacket, as well as by the various modifications of the plan, both as regards mode of application, and material employed, which have been introduced

since Dr. Sayre's first demonstrations in these countries in 1877. Dr. Macnaughton Jones having had the opportunity of witnessing and taking part in these demonstrations has since then applied the jacket in very many cases, and he thus summarises his individual experience :—" However surgeons may differ as to the value of the plaster jacket in individual cases of spinal disease or deformity, I think that any man who has carefully watched the results of the application of Sayre's principle in a large number of cases must acknowledge the debt that the profession owes to that surgeon for the enforcement of the value of extension in the treatment of spinal curvatures. If at times we feel that those graphic demonstrations Dr. Sayre gave in England and Ireland in 1877 carried us a little too far in our anticipations of results and successes, and the universal applicability of the principle, or even led to thoughtless and illogical conclusions and applications of the jacket in cases unsuited both for it and suspension, still we are bound at least to acknowledge that the adoption of his ideas and suggestions in the management of spinal curvatures has enabled us to treat successfully a number of patients whose lives would otherwise have been rendered miserable through pain and deformity. I am certain, no matter how many may detract from the credit, or deny the value of Dr. Sayre's suggestions, that a large number of practising British surgeons will bear out this statement from their practical experience. Individually I can say that since 1877 I have used no steel support in any spinal case." The author, however, previously states, in his preface, that he is no blind adherent of all the details of Dr. Sayre's methods of treatment, and he feels sure that, as a surgeon, Dr. Sayre will not think the less of him for his independence of opinion. The earlier chapters of the book deal with the modes of examining a patient affected with spinal disease, and contain plain directions as to suspension, and the details of the application of the jacket, including the methods pursued by Mr. Davy (hammock suspension) and Mr. Walker (many-tailed bandage), as well as of Cocking's poroplastic felt jacket and self-suspension. As regards the choice of a jacket, the author states that his practice for some years past has been much as follows :—" In angular curvature, until I believe that ankylosis is complete, and the patient has had all the benefit possible from the rigid support, I apply and keep on the uncut plaster or tripolith jacket. After a time I cut this jacket, bind it, and have it laced in front. A little later on I apply a poroplastic jacket, and make the patient continue wearing this for a considerable time. I do not, as

a rule, in the very early stages of Potts' curvature use extension save in applying the jacket. I combine rest in the prone position with the employment of the support." Chapter VI. is devoted to a *resumé* of the opinions of foreign and British surgeons on Sayre's method, and the remarks of the latter, at the meeting of the International Medical Congress, in 1881, are quoted *in extenso*. Charcot's views in reference to the paralysis due to pressure from Potts' disease is touched upon in the following chapter, and the epitomised records of a number of cases successfully treated by the plaster jacket are introduced. The latter portion of the book is concerned with the treatment of affections of the hip, knee, and ankle joints, the remarks of the author in reference to diagnosis, and the application of certain special splints — such as Sayre's and Thomas' — are eminently practical, and illustrated with efficient woodcuts. With the single exception of Dr. Sayre's own book, there is perhaps no work with which we are acquainted which will prove more useful as a safe and practical guide to the surgeon who may be unfamiliar with the details of the special methods of treatment with which it deals. The book is neatly got up and copiously illustrated.

The Principles and Practice of Surgery; being a Treatise on Surgical Diseases and Injuries. By D. HAYES AGNEW, M.D., LL.D.; Professor of Surgery in the Medical Department of the University of Pennsylvania. In Three Vols. Philadelphia: J. B. Lippincott & Co. London: 16, Southampton-street, Covent Garden. 1878–1883.

THE first of these large volumes appeared in 1878, and the last in 1883. They are the product of one pen, and, written, as they were, in "moments of leisure" from the calls of practice, they form a splendid example of what may be done in time carefully used. Professor Agnew has deservedly earned a high reputation as a surgeon, even on this side of the Atlantic, and the results of his experience treasured in a busy life, must be looked upon as valuable at least in the practical aspect. There seems to be no end of the making of surgical books. England and America, as the two great English-speaking countries, appear to vie with each other in the production of works of reference, and we are bound to say that our cousins are, at all events, not behind us in the fulness with which they do their work. One feature of the volumes before us is the

illustrations. The title page properly describes them as "profuse." Over two thousand are introduced in the text, and they are, as a rule, both well executed and instructive.

The first volume is devoted mainly to injuries of different parts of the body, with articles upon inflammation, diseases of the abdomen, and diseases of the blood-vessels. These subjects are very fully and very well dealt with, and there are few points to which exception can be taken. It is a proof of how rapid the strides of modern surgery are when we notice such sentences as these:—"I shall say nothing of the barbarous and repulsive methods of castration, the actual cautery and *excision of the hernial sac*, which at one time, during the dark ages of the surgical art, were extensively practised;" and, "after a careful review of the various operations proposed and practised for the radical cure of hernia, not one can be said to be satisfactory; and it is a question admitting of grave doubt whether, in the present state of our knowledge on the subject, the surgeon is justifiable in resorting to any other treatment than that by a properly adjusted truss." This was, however, written in 1878, and certainly does not apply to the question now, although only six years have elapsed. The hernial sac is excised without hesitation, and the operation which the late Professor Gross so warmly advocated—namely, freshening the sides of the inguinal canal, and uniting its sides by silver sutures, is performed with remarkable success. We agree with the writer that the operation ought not to be done in most cases in very young children. There is a fair chance of cure by the use of the truss, but this instrument must be well-fitting, and be properly applied. There is almost a certainty that otherwise the opening will be simply enlarged, and the hernial protrusion be increased.

The chapters upon Aneurysm are very comprehensive, and give a good epitome of the whole subject. The author, speaking of treatment by compression, enforces a plan of preparation which we have seen employed with much success in this country:—"For several years I have been in the habit, before applying severe compression for the cure of external aneurysm, of subjecting my patient for six or eight days to a preparatory course of treatment. This preliminary measure consists in confinement to the recumbent position, elevation and flexion of the limb, when the aneurysm is in the lower extremity, a restricted though nutritious diet, and the internal exhibition of tincture of aconite or of *veratrum viride*, in order to reduce the force and frequency of the heart's action. It is

to this preparatory measure that I attribute, in some degree at least, the satisfactory results which I have realised from compression." That rest can cure, or predispose to cure of aneurysms has been abundantly shown. The late Mr. Syme, of Edinburgh, found a popliteal aneurysm cured while he was preparing the patient for ligature of the femoral, and, later on, Mr. Jolliffe Tufnell secured the same result by rest and elevation of the limb. We think that some of the failures of which we hear might be avoided if this principle of preparation were more zealously carried out.

The aneurysms of special vessels and the operative treatment are carefully described in the concluding chapter.

The second volume is devoted to dislocations, diseases, and excision of joints, amputations, diseases of the urinary tract, surgical diseases of women, and diseases of the mouth. It is not usual to find in surgical works so full a chapter on the treatment of vaginal and uterine disease. The vigilance of the specialist has gradually tried to shut off that department from the general surgeon, and the obstetric practitioner now thinks that because he can diagnosticate a presentation he is the only person fit to lay hands upon an ovarian tumour. Of course this is an assumption for which there is no just ground whatever, and it is in no small degree due to the apathy of the surgeon, who has failed to assert his claim, that such cases most properly come within his domain. There is no "special" knowledge required for such cases, and if there be it is certainly with him whose duty brings him into daily view of wounds, their treatment, and their complications. Professor Agnew is evidently of this opinion; indeed, by the fulness with which he deals with uterine displacements, and the use of pessaries, he would like to confine the midwifery practitioner to midwifery.

The observations on excisions are practical and sound. The historical notes are of interest, especially when we remember the progress which these operations have made in recent years, as the first complete excision of the knee in America was done so recently as 1857, by Cooper of San Francisco, and Esmarch reports his first in 1858. Nowadays the operation has lost its novelty, and we think we may fairly say that Dublin surgeons have done a great deal towards establishing resection of the knee as a sound surgical proceeding.

The third volume opens with a description of the diseases of the larynx and trachea, and of the operations necessary for their relief. Dr. Agnew declines to discuss the question as to the unity or

duality of croup and diphtheria, but he expresses his belief, founded upon clinical experience, that they are distinct affections. The clinical differences which he notes appear to us to be hardly conclusive in support of his opinion, at least so far as the so-called membranous croup and diphtheria are concerned. In speaking of the surgical treatment of laryngeal stenosis the author refers to the attempt of Bouchut to keep the passage pervious by the introduction of a tube, but he adds : "The irritation which attends proceedings of this nature is too great for the method to be productive of any good." He does not appear to be aware of the success with which the plan has been followed by Dr. M'Ewen, of Glasgow, who has reported most favourably of it. Dr. Agnew is a strong advocate of tracheotomy in croup, and his statistics, taken from all sources, show an average of recoveries amounting to 25 per cent. In America the cases reported amount to 863, with 178 recoveries. The record from the Hospital Saint Eugénie, between the years 1854 and 1875, show 2,312 operations for croup, with 519 cures—an appalling proof of the frequency with which the disease occurs in Paris. It certainly does not tend to show that croup is a sporadic and non-contagious disease, as the author contends. While approving of the operation in suitable cases he observes :—"Yet when I take into consideration the numerous recoveries under my own observation which have taken place where operations have been declined, I cannot believe that intrinsically tracheotomy in croup has diminished the mortality of the disease to the extent claimed by a number of writers."

Chapters on affections of the nerves, the eye and ear, muscles, tendons, bursæ, the mammary gland, and the lymphatic system, on syphilis and on tumours, fill up the volume. That on massage is particularly interesting and important. It is a process with which much may be done, but a great deal of ignorance exists as to the way of carrying it out. The usual text-books do not give more than a reference to the method ; and this volume gives a clear account of its scientific application.

Altogether we may say that this work is one which deserves a wide circulation. While it does not contain many new points, it is essentially full and practical, based on the extensive personal experience of a distinguished surgeon, and gives a fair and reliable account of surgical science and art up to date. As a book of reference in all the departments that belong to the surgeon it has few equals.

Traité de l'Affection Calculuse du Foie. Par le DOCTEUR JULES CYR. Paris: V. Delahaye et Lecrosnier. 1884. 8vo. Pp. 345.

THIS brochure is the outcome of the author's experience at Vichy, where, in private practice and in the wards of the Thermal Hospital, he has had many opportunities of observing calculous affections of the liver. The author is well known in connexion with various essays on diabetes and several hepatic affections, and as the translator into French of Murchison's "Diseases and Functional Derangements of the Liver." The contents of the book are arranged in eight chapters. It cannot be said that there is anything to be found in it which is not already to hand elsewhere. The references to the Vichy cure, and the explanations of the efficiency of the waters there, are among the most interesting parts of the book. ↗

RECENT WORKS ON PATHOLOGY.

An Introduction to Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D., Lond., F.R.C.P.; Physician to Charing Cross Hospital, &c. Sixth Edition, revised, enlarged, and illustrated. London: Henry Renshaw. 1884. 8vo. Pp. 556.

THAT this, the best known and one of the oldest of Renshaw's Manuals, should so rapidly have reached a sixth edition, proves conclusively that the work has supplied a want. It is, in fact, a thoroughly good book, and its intrinsic worth has been much enhanced by the assistance which Dr. Green has received in the preparation of the present edition from his colleague, Mr. Stanley Boyd, Assistant-Surgeon to Charing Cross Hospital, and a very distinguished alumnus of University College and graduate of the University of London.

One of Mr. Boyd's contributions is the "Introduction," containing a very succinct and intelligible account of the constitution, physiology, and genesis of cells, as well as a definition of disease, its ætiology, mode of extension, and terminations. The chapters on "Tumours," "Regeneration," "Septicæmia and Pyæmia," and "Vegetable Parasites" are also from his pen. A clear account is given of septicæmia under its two forms—*septic intoxication* and *septic infection*. The author has adopted Koch's views on the subject.*

* Traumatic Infective Diseases. Translated by Cheyne. New Sydenham Society. London: H. K. Lewis. 1878.

But the most striking and novel feature in this edition is Chapter XLVI., on "The Vegetable Parasites." This is entirely Mr. Boyd's work, and bears his name. The chapter opens with a parallel between fermentation and infective disease. The vital (or germ) and the physical theories of fermentation are next considered, and then follows a natural history of the vegetable parasites—including the three groups of pathogenic organisms, the *Schizomycetes* or *Cleft-fungi*, the *Blastomycetes* or *Yeasts*, and the *Hyphomycetes* or *Moulds*. This difficult subject is admirably handled, and does infinite credit to the author.

The Essentials of Pathology. By D. TOD GILLIAM, M.D. London: Henry Kimpton. 1883. Small 8vo. Pp. 296.

THIS book will be found useful by students who are commencing the study of pathology. It is concise, and represents fairly well the most important facts of the science. The author does not enter into the discussion of doubtful questions, and quotes no authorities, but endeavours "to impart clear-cut conceptions of the generally accepted doctrines of to-day." The volume is well printed, and neatly brought out. It is illustrated by good engravings, the most of which have been taken from the well-known manual of Kindfleisch, and there is a sufficiently copious index. As a student's book we think it is to be commended.

The Pedigree of Disease; being Six Lectures on Temperament, Idiosyncrasy, and Diathesis, delivered in the Theatre of the Royal College of Surgeons in the Session of 1881. By JONATHAN HUTCHINSON, F.R.S. London: Churchill. 1884. 8vo. Pp. 142.

THE term *Temperament* Mr. Hutchinson defines as applicable to the sum of the physical peculiarities of an individual, exclusive of all definite tendencies to disease. Of the facts which have been supposed to indicate temperament he concludes that part of them are merely the characteristics of different races, and another part merely the products of past disease—hence, very little remains to be classed under the head *Temperament*.

Idiosyncrasy is a term applicable to any definite peculiarity of organisation, of which the consequences may occur unexpectedly and otherwise inexplicably.

Diathesis, on the other hand, implies a distinct proclivity to disease, and is defined as "any bodily condition, however induced,

in virtue of which the individual is, through a long period, or usually through the whole life, prone to suffer from some peculiar type of disease."

There are three great universal diatheses dependent on the commonest causes of disease by which man has been assailed from the earliest times. These are—the catarrhal, the rheumatic, and the scrofulous. There are others of less importance, but similar, since they comprise us all in their range of liability—the diathesis of senile degeneration and that of malignant new growths. There are others, widely spread, but not universal, since they depend on local exposure or personal habits. Among these are the ague-diathesis, the diathesis of rickets, those of bronchocele, scurvy, leprosy, pellagra, and gout. There are numerous other less well-defined diatheses, "the description of a fresh diathesis being as easy as the discovery of a new nerve-centre, or the revelation of a new bacterium."

There is probably no one living more competent than Mr. Hutchinson is to discuss the subjects dealt with in these lectures, and on every page we find evidence of his vast experience and of the wonderful sagacity with which he traces the relationships of morbid conditions. We cannot too highly recommend the work, which is not less interesting than it is instructive.

Die Fettliebigkeit (Corpulenz) und ihre Behandlung nach physiologischen Grundsätzen. Von DR. WILHELM EBSTEIN, Professor in Göttingen. Sechste Auflage. Wiesbaden: J. F. Bergmann. 1884. 8vo. Pp. 54.

THE great popularity of Professor Ebstein's pamphlet is best shown by its having reached a sixth edition within two years of its first appearance. It is addressed not only to the medical profession, but to the general public, and is intended to replace the so-called Banting cure, or that consisting in the removal of fat from the body, by something better. The author considers it unproved that any of the fat stored in our bodies is derived from the fat which is taken as food, but holds that it is all formed by the splitting of proteids into a nitrogenous and a non-nitrogenous portion, the latter of which is, under favourable circumstances, retained in the body as fat. This is much influenced by sluggish habits and everything which enfeebles the oxidative processes. Carbo-hydrates, when added to the food, diminish the breaking up of proteids, but

being themselves easily oxidised, they spare the further oxidation of the nitrogenous portion of the proteid which does split up, and in this way contribute powerfully to the laying up of fat. Fatty food, on the other hand, while diminishing the breaking up of proteids in the body, is much less easily oxidised than the carbohydrates were, and does not prevent the complete oxidation of whatever proteid does undergo splitting. Hence the addition of carbohydrates to the food promotes fatness, while the addition of fat has no such effect.

On these principles the author founds his system, which has, he says, been eminently successful. He maintains very rightly that the diet of a corpulent person must be one which will support life and health—that it must be one which can be continued throughout the patient's life, for if he returns to his old habits he will not be slow to again increase in fatness.

As an example we give the following dietary, on which a man of forty-four years diminished 20 lbs. in weight within half a year, while his general health and mental and bodily vigour greatly increased:—

¹² “1. *Breakfast* (in winter at 7 30, in summer at 6 or 6 30 a.m.).—One large cup of tea (about 10 oz.) without milk or sugar; 50 grams (about 1½ oz.) of white or toasted brown bread, with plenty of butter.

“2. *Dinner* (at 2 or 2 30 p.m.).—Soup, often with marrow added to increase its fatness; 120–180 grams (4¼–6¼ oz.) of any kind of fat meat boiled or roast, with rich sauce. Vegetables in moderate quantity, preferably leguminous vegetables or cabbage, cauliflower, &c. Potatoes completely forbidden, and turnips nearly so. After dinner some fresh fruit, if attainable; some salad, or occasionally baked fruit without sugar. As drink, two or three glasses of light white wine. Soon after dinner a large cup of tea without milk or sugar.

“3. *Supper* (at 7 30 or 8 p.m.).—In winter always, and sometimes in summer, a large cup of tea without milk or sugar; an egg or some broiled fat meat, or both, or some fat ham, sausage, smoked or fresh fish; 30 grams (about 1 oz.) of white bread, with plenty of butter; sometimes a small quantity of cheese, and some fresh fruit.”

It will be seen that the whole quantity of food allowed is very small, and while carbohydrates are as much as possible excluded, the proteids are given in small amount, and the only substances freely allowed are those of a fatty nature. While we are not prepared to endorse in all respects the physiology of Prof. Ebstein, we do not question the good results which, he states, attend invariably

his treatment when fairly carried out; but we are inclined to think that the results are due more to the diminution in the quantity of the food than to the changes in its quality. However, there can be no doubt that his method is vastly superior to the mischievous and unscientific Banting treatment.

A Handbook of the Diseases of the Liver, Biliary Passages, and Portal Vein. By HENRY R. RUCKLEY. London: W. Kent & Co., 23 Paternoster-row. Pp. 221.

THIS book is neither more nor less than what it professes to be—a handbook, in which there is something said about nearly all the diseases referred to in the title.

In the preface the author uses words of warning in reference to “the smattering of knowledge to be gained from mere handbooks,” from which it might be inferred that the book deserved a more pretentious name.

It is, on the whole, a well-constructed sketch, but one in which the skill of the artist is more apparent than real.

The book is dedicated to Edward Dillon Mapother, M.D., by his former pupil, in admiration of his talents as a teacher, a scientific surgeon, and an author.

The Refraction of the Eye; a Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S. London: Churchill. 1884. 8vo. Pp. 204.

THIS, the most recent English work on the subject, is tastefully bound, well printed, and contains 87 illustrations, and yet we are somewhat at a loss to know why it was written. The author announces his desire to have been “to state briefly and clearly the main facts with which practitioners and students should be acquainted in order to enable them to diagnose errors of refraction accurately and to prescribe suitable glasses for their correction.”

It has been said that there are three sorts of men who go into print. Firstly, those who really have something new to tell the world; secondly, those who think they have something new to tell the world; and thirdly, those who wish the world to believe they have something new to tell it. To which of these categories should we consign Mr. Hartridge? Certainly not the first. The only novelty in this work is the novelty of expression. Nor does

it supply any want. Those who wish to make up the subject of refraction and accommodation quickly, and with comparatively little trouble, can read Morton's admirable little book, whilst those who seek to go deeper have "Donders' Classical Treatise."

Mr. Hartridge has evidently acquired some knowledge of the subject on which he writes, and in places his descriptions and explanations are fairly lucid, but in many instances we fear that he has but imperfectly realised his preface.

The first chapter is a useful one on the Elements of Optics; the next is on Refraction, Accommodation, and Convergence, and in this the inaccuracy of expression and explanation render the understanding of the subject a matter of much difficulty. At page 24 he states that, "to enable us to see an object distinctly it must be viewed under an angle of not less than 1'." Of course he means that to see a complex figure like a letter distinctly, each part of the figure must be separated from the others by an interval equal to not less than the arc subtending an angle of 1' at the nodal point.

The want of precision in the first paragraph of page 28 is most unfortunate.

At page 34 he displays his ignorance of the simplest mathematical expressions, confounding ∞ with $\frac{1}{\infty}$. When he means that the convergence is infinitely small, he calls it infinitely large. At page 36 he repeats and amplifies this error. Here also he makes another statement which is obviously erroneous:—"As the angle of convergence is greater the nearer the object approaches the eye, we may say that the angle of convergence is *inversely proportionate* to the distance of the object from the eyes." Of course the nearer the object the greater the angle of convergence, but it is not proportionate.

Chapter III. is on the Methods of Determining Errors of Refraction. The paragraph on the acuteness of vision is so inaccurately and confusedly expressed, that we fear it will tax the mental acumen of the reader to an undesirable extent; those wishing to understand it will do well to study Donders beforehand.

Chapter IV. is on Retinoscopy. At page 64 he recommends the use of atropine to enable us to correct the accommodation "due to the *normal* tone of the ciliary muscle." Most workers are zealous to make allowance for this normal tone, which being normal should not be corrected.

At page 86, in quoting from Mr. Story's (whose name he does not even spell correctly) article on the advantages of the plane

mirror, he exhibits a masterly disregard of the conventional rules of grammar and punctuation: we hope Mr. Story expressed himself more elegantly.

It would be tedious as well as unprofitable to go seriatim through the errors contained in each chapter—errors which we hope will not appear should this work ever attain to a second edition.

Felicity of expression is a talent which few receive, and graces are gifts, and therefore cannot be demanded, but accuracy and intelligibility are imperatively required of anyone who aspires to the dignity of an author, more especially if that author, having nothing new to say, writes as a mere rearranger, for the purpose of placing other men's thoughts in a more readable form.

We regret to have to speak so severely of this book, but manuals for students, of which the work before us is one, should be without mistakes, and until Mr. Hartridge has corrected his mistakes we cannot recommend the book to those for whom it was written.

The book could, by a careful revision, be made a useful one, but the revision should be by a competent person.

Lectures on the Localisation of Cerebral and Spinal Diseases. By J. M. CHARCOT. Translated and edited by W. B. HADDEN, M.D., Lond. The New Sydenham Society. 1883. Pp. 341.

PROFESSOR CHARCOT has won for himself a foremost position both as a clinical teacher and as an original investigator, and he cannot but feel gratified at the cordial recognition which his writings have obtained in England. Within the last few years the New Sydenham Society has provided its members with translations of three of M. Charcot's works, and a fourth volume is now added to the series.

Dr. Hadden has performed his part with elegance and fidelity, but we may surely hope that the time is not far off when the slight scholarship requisite for the perusal of French scientific books will be so generally diffused throughout the profession that the necessity for presenting translations of easily accessible French works will have disappeared.

The object of M. Charcot in delivering these lectures was to give, chiefly from the *clinical* point of view, an account of what was known on the attractive subject of the regional diagnosis of diseases of the nervous centres. He tries to show that clinical investigation and pathological anatomy are capable of assisting

greatly in the elucidation of cerebral and spinal function, while he does not omit to point out that modern anatomy and physiological experiments are sometimes out of harmony with clinical facts and consequently require modification.

The text naturally falls under two subdivisions:—Cerebral localisations and spinal localisations. Under each a detailed account is given of the topography and mutual relations of the ganglia and strands of the nervous centres so far as recent anatomical investigations render possible. Owing to the style of composition of the author this portion is somewhat fatiguing reading, and might, we think, have been stated in shorter compass with great advantage.

Still we must admire the skill with which M. Charcot utilises anatomical facts as aids to clinical diagnosis, and we are persuaded that these lectures are well worthy of attentive study by all who care to dip below the surface in the investigation of nervous diseases.

Manual of Diseases of the Ear. By THOMAS BARR, M.D.; Surgeon to the Glasgow Hospital for Diseases of the Ear, and Lecturer on Aural Surgery, Anderson's College. 115 Illustrations. Glasgow: Maclehose & Son. 1884. Crown 8vo. Pp. 520.

THE past few years have been prolific in treatises and manuals on otology. Perhaps in no branch of medical science has there been more substantial advance made than in this department. We cannot boast of much original research on the part of those who devote all their time and talents to this specialty in the United Kingdom. Most of the work is borrowed from either Continental or American authorities; and more especially are we indebted to such men as Politzer, Schwartze, Weber Liel, Voltolini, Urbantschitsch, Löwenberg, Lucae, Hartmann, von Tröltsch, and others on the Continent, while the Turnbells, Burnett, Roosa, amongst several well-known American names, have shed special lustre on the repute of the New World, in leading the van of scientific otology. It is true that good clinical work has been done in the United Kingdom, and many valuable suggestions in the improvement of appliances have been made and adopted. But from whatever cause, since the death of Hinton, British otology has, we must confess it with regret, and more or less of shame, degenerated into the mere writing of manuals and brochures, of great use to practitioners and students, yet adding but little to the scientific advance of otology. Wilde, Toynbee, and

Hinton have not had their successors. The well-known Irish aurist laboured in the dawn of our knowledge, and must ever be regarded as one of those who gave the first impetus to the study of affections of the ear and the belief in their practical management. Toynbee suddenly raised the reputation of the English school of medicine in this department, and has left imperishable records of his self-sacrificing zeal as a laborious worker, a patient investigator, and a truthful recorder of pathological appearances and clinical histories. If the noble-minded Hinton did no more than to add to the spread of otological knowledge by his power as a clinical teacher, and the generosity of nature which prompted him to place his time, talents, and great experience at the disposal of any man anxious to learn practically the treatment of morbid ear states, his efforts in the cause would not have been in vain. But in the splendid and unrivalled atlas of original representations of the various abnormal conditions of the membrana tympani, Hinton has bequeathed one of the most beautiful and truthful reminders of patient toil and devotion to his subject that there is in medical literature. On whom can we say "his mantle has fallen!" And one more worker, to whom we might have justly looked for great things in this branch, has just passed over to the majority. He also has left behind him a proof of his capacity for work, and the enthusiasm which animated him—a worthy pupil of a worthy master. Taught by Hinton, Patterson Cassells imbibed all the kind impulses, at the same time that he emulated the energetic and active clinical spirit of the eminent London aurist. No one who ever met Cassells could have failed to recognise the earnest and philanthropic spirit of the man. And like others who have not lived to reap the harvest of their work, Cassells has been taken at the moment when, by enormous effort and continued strain, he succeeded in placing within the reach of every practitioner in Great Britain the work of the great Continental leader of otological research and literature, the important "Text-Book of Diseases of the Ear," by Professor Adam Politzer. By so doing he laid the entire profession, not alone in the United Kingdom but in every English-speaking country, under a deep obligation. No work of reference in the English language can for a moment compare with this. Scotland may be proud to remember Cassells amongst the number of her distinguished workers. To succeed Cassells and fill the place he held in Glasgow is no easy task.

But we must confess that, on carefully perusing the work now

before us, we feel that there is every promise of a worthy successor in the person of its author. For its size we know of no work to surpass it in the information it contains, its clearness of style, and the comprehensive grasp taken of the subject. The table of contents shows at a glance the plan of arrangement and subdivision of the subjects dealt with:—

“Part First.—The Examination of the Ear—Causes of Ear Disease—Affections of the Nose and Throat in their connexion with Disease of the Ear—Methods of Treatment.

“Part Second.—Diseases of the parts of the Ear covered by Skin, namely, the Auricle—The External Auditory Canal—The Tympanic Membrane.

“Part Third.—Diseases of the Mucous Tract of the Ear—Non-Suppurative Diseases of Middle Ear—Suppurative Diseases of Middle Ear—Consequences of Suppurative Diseases of the Middle Ear.

“Part Fourth.—Diseases of the Auditory Nerve and Labyrinth, including Tinnitus Aurium and Deaf-Mutism”

There is an admirable collection of formulæ appended to the work, which will be found of use both by students and practitioners. Year by year fresh additions to our knowledge of the ætiology and better modes of treatment of aural affections have come so numerous and rapidly, that it is most difficult to condense into a comparatively small space the needful information to guide a man in general practice. Pathology has explained much that seemed mysterious in symptomatology, and the strides of physiological science have elucidated many pathological phenomena and subjective symptoms connected with middle and internal ear disease. We might instance as a few examples of the improved state of our knowledge of certain morbid phenomena, the relation of parasitic fungi and zymosis to external ear affections, and indirectly to diseased states of the tympanic cavity; the relation of nasal and throat congestive conditions to chronic catarrh of the middle ear and obstruction of the Eustachian tubes; the various subjective and other symptoms which have their origin in innervated states of the tubal and tympanic muscles; the power of differentiating affections of the internal ear and labyrinth, and the closer understanding of the relation of tinnitus and vertigo to various cerebral lesions; the selection of cases in which paracentesis of the membrane or tenotomy of the tensor tympani may be performed with a fair prospect of success. These are but a few of the many solid advances which we owe almost entirely to Continental and American

aurists. Obviously, in a small work, the author has to omit many facts of clinical importance, and the pathological evidences of truths which he expects his readers to take for granted. But he has, at least, the satisfaction of knowing that he is encouraging the spread of accurate knowledge, and helping to crush that vile weed, routine empiricism, from out the rank-and-file of the profession. As accurate ideas are thus disseminated by improved teaching throughout the schools and in general practice, we may hope to see the fungus of a limited specialism destroyed. This desire does not, perhaps, so much apply to otology. In this special department there is a wide field for him who is fortunate enough to have the time and opportunity to avail of it. It is rather in other "ologies," and through other "scopes" than the ophthalmoscope and otoscope, that we see almost unlimited scope for an educated quackery and a refinement of pretentious imposition. By the wider diffusion of knowledge through the better education of our students, and the healthier competition of more enlightened practice, much of the necromancy that now is interestedly maintained in such simple studies as those of otology and laryngology, will be detected and exposed. It is by placing such clearly-written works as this manual of Dr. Barr, which is within the mental grasp of any intelligent senior student or junior practitioner, that we may hope for a healthier state of things to arise. We can confidently recommend this book as a safe guide in practice, and a capital manual for the student to peruse.

H. M. J.

Visceral Neuroses; being the Gulstonian Lectures on Neuralgia of the Stomach and Allied Disorders. By T. CLIFFORD ALLBUTT, M.A., M.D. Cantab.; F.R.S.; &c.; Consulting Physician, Leeds General Infirmary. London: J. & A. Churchill. 1884. 8vo. Pp. 103.

THE re-publication of these Lectures in a separate form will be widely welcomed by the Profession. Though they have been universally read, and as generally enjoyed, numbers will be glad to re-peruse them at leisure, and to have the book on their library shelf. In his preface to the work, Dr. Clifford Allbutt says:—

"The almost enthusiastic welcome of my remarks on gynecological subjects, not only by the other branches of our profession, but also by those gynecologists whose good opinion I most value, has been a peculiar relief to me. From all directions, by word and letter, I have been

assured that my zeal for the high repute of that invaluable department of medicine has been seen and valued by those gynæcologists whose withers are unwrung. But London practice is unhappily, at present, eaten up by specialism out-specialised. A smooth-tongued and audacious gentleman needs but six months' practice in the manipulation of some endoscope or other to become a dexterous specialist and a thriving tradesman."

Dr. Allbutt instances the case of a young lady, who, having consulted an eminent "lung doctor," was passed on from him to a physician for her "general health." "Is this sort of thing," he asks, "of which we hear every day, a tribute to an imbecile kind of etiquette, or is it an indulgent tolerance of something short of rectitude?" He feels that if it continues to find encouragement the reputation of the London schools must wane:—

"The robust general practitioners who do possess a wide knowledge of their profession, have hitherto tolerated these manœuvres to please their patients, but they are getting tired of the fashion and contemptuous of its children. The specialist in his turn is beginning to ignore the general practitioner, and to annex his patients, and thus science loses, practice loses, and the good fellowship of a great profession is dissolved."

This is plain and bold speaking.

Yet we must ask ourselves—Is it not time that some authoritative opinion, and one having due weight with the profession generally, should be heard, with no uncertain voice, denouncing many of the tricks and shams of modern specialism? We trust that this fearless expression of a feeling that is widely felt may have the desired effect. But, apart altogether from his denunciation of the traders in hysteria, Dr. Clifford Allbutt's lectures are replete with valuable hints for the detection and management of various neurotic states which daily come under the notice of every physician, and his caution is as equally strong and oft-repeated, that so-called hysteria is not to be treated as a phantom of disease, but that we are to search for its cause or the attendant neuralgia in some neurosis of stomach, liver, kidney, or some local irritation which furnishes the disturbing element. These lectures afford agreeable and useful reading, and to no class should they prove more instructive than to those who have a tendency "to cage" their patients "up in London back drawing-rooms," and "visit them almost daily," or twice daily, "for some uterine disease" more often fancied than real.

PART III.

HALF-YEARLY REPORTS.

REPORT ON DISEASES OF WOMEN.

By WILLIAM J. SMYLY, M.D., Univ. Dubl.; F.K.Q.C.P.I.;
Gynæcologist to the City of Dublin Hospital.

HÆMORRHAGIC EXTRAVASATIONS IN THE NEIGHBOURHOOD OF THE UTERUS.

(a). *Their Diagnosis.**—For this we rely principally upon suddenness of the onset, acute anæmia, absence of fever, and the rapid formation and physical characters of a tumour. In many cases we can thus arrive at a correct diagnosis, but there are others in which we cannot at present do so. Such conditions are especially liable to be confounded with perimetritic exudations. Here, if the history be indefinite, and fever absent, the physical characters alone will not help, since, as Fritsch (*Krankheiten der Frauen*, 1884) forcibly expresses it, "It cannot be *felt* whether a fluid contains more red corpuscles or more white."

From the investigations of Dr. Dick, however, it seems probable that in the examination of the urine we have a means of determining this point.

Urobilin was first demonstrated in febrile urine by Jaffé (*Virchow's Archiv*, Bd. 47), who also described its chief peculiarities. Shortly after Maly (*Liebig's Ann. der Chemie*, 1872) developed the substance from the colouring matter of the bile, and named it hydrobilirubin, although he knew it to be identical with the urobilin of Jaffé. It has also been developed from hæmatin (*Hoppe-Seyler*).

This substance is an amorphous reddish-brown powder, possessing feebly acid characters slightly soluble in water, but freely so in alcohol and alkaline solutions.

* *Über den diagnostischen Werth der Urobilinurie für die Gynækologie von Dr. Dick. Archiv für Gynækologie, Bd. XXIII., 1884.*

Dilute alkaline solutions are the colour of ordinary urine, but on the addition of an acid become red.

The addition of a few drops of chloride of zinc to an ammoniacal solution of the pigment produces a most characteristic green fluorescence. Another valuable test is a remarkable absorption band between the green and blue in the spectrum.

According to Professor Neucky, with whose assistance Dr. Dick carried out his investigations, bilirubin is a constant ingredient of human urine, and can be detected by acidulating it with hydrochloric acid, shaking with amylic alcohol, and spectrum analysis.

Gerhardt (*Wiener med. Wochenschrift*, 1877) was the first to call attention to the occurrence of abnormally large quantities of urobilin in the urine in certain diseases, and Bergmann (Volkmann's *Vorträge*, 190) has utilised this sign as a diagnostic in apoplexy. It has also been observed in pulmonary infarction and traumatic extravasations into the tissues. These observations induced Dr. Dick to try whether the occurrence of this substance in the urine could be used in the diagnosis of pelvic hæmorrhages.

The appearance of urine containing an excess of the colouring matter is so peculiar that it at once suggests the idea of something abnormal in its contents; it varies from a light to a dark brown.

In many cases there is a deposit of the pigment in the skin and conjunctivæ, causing a brownish discoloration, which has been called bilinicterus, to distinguish it from ordinary jaundice. The appearance of the urobilin in the urine does not follow the extravasation of blood immediately, some days being required for it to undergo the changes necessary for its development.

Since the subject is such a novel one, I venture to give a few details of the cases from which Dr. Dick's conclusions have been drawn. Case I. was one of extra-uterine foetation, with bursting of the sac and extravasation of blood into the abdominal cavity. The symptoms were sudden violent pains in the abdomen, fainting, cold extremities, and a pulse of 150. Three days after the urine assumed a peculiar coffee-brown colour, and upon examination was found to contain a quantity of urobilin. Next day the skin had an icteric hue which lasted till the eighth day; when it faded the excess of urobilin simultaneously disappeared from the urine. A decidua was discharged on the fifth day. The patient recovered. Case II. was very similar to the first. It also was one of extra-uterine foetation, with rupture of the sac and extravasation of blood into the peritoneal cavity. Seven days after the urine became dark,

of a coffee-brown colour, clear, acid in reaction, containing neither blood nor biliary colouring matter, but very much urobilin. The skin also was icteric. In this case the hæmatocele supplicated and discharged its contents through the bladder. Case III. is the most remarkable of the series. The patient, aged thirty-five, had three children and one abortion, after which she suffered from pelvic inflammation. Having over-exerted herself at the menstrual period, she was suddenly seized with pains in the abdomen, which continued long after, but the flow did not come on. Dr. Dick first saw the case (in consultation) about five weeks after. On examination he discovered in Douglas' space a doughy irregular tumour, which had displaced the uterus forwards. The skin was markedly yellow, and the urine, which was of a deep coffee-brown colour, contained a large quantity of urobilin. Not having seen the case from the commencement, and the history being indefinite, a certain diagnosis was not possible. However, from the large quantity of urobilin in the urine, and from the colour of the skin, he came to the conclusion that it was a hæmatocele. The tumour gradually reduced in size, and the icterus and urobilin also diminished. At the end of a month the tumour was aspirated, and dark-brown blood was drawn off. For four days she went on well. Then, however, the menstrual flow came on, attended by increased pain in the abdomen and enlargement of the tumour. Four days after this the urobilin reappeared in the urine, and the icterus returned. The tumour was again aspirated and a quantity of blood drawn off. It, however, again filled and increased in size until it reached to the umbilicus, but this time there was neither icterus nor urobilin. As a rupture of the sac seemed to be imminent, an incision was made into it through the right fornix vaginæ, and a great quantity of putrid matter evacuated. The examining finger passed into a cavity, the walls of which were covered with old blood-clots. After this cavity had been irrigated with a 3 per cent. solution of carbolic acid and a drainage tube introduced, the temperature rapidly fell.

In the first two cases urobilin was discovered in the urine of patients in whom extravasation of blood had been already diagnosticated, and was evidently the result of it. In the third case it was the presence of the urobilin in the urine which led to the diagnosis of the hæmatocele. In this case it was certainly most remarkable that when the tumour contained blood there was urobilin in the urine; as the tumour diminished so did the amount of urobilin;

when it refilled the pigment reappeared, both in the urine and the skin; but on the third occasion, when it became so greatly distended with inflammatory and putrid fluids, there was neither icterus nor urobilin in the urine.

From these observations he concludes that, except in fever and hepatic obstruction, the presence of urobilin in the urine is connected with blood extravasation.

It may perhaps seem strange that a hæmoglobinuria does not occur. The investigations of Cordua have shown, however, that this takes place only when the blood breaks down actually in the circulation, or when frozen or foreign blood (that is, from a different kind of animal) is injected into the serous cavities or cellular tissue. When the same kind of blood is used, then, according to Langhans, the blood corpuscles are partly absorbed and changed into pigment granules, as well as into crystallised bilirubin (hæmatoidin). These changes in the extravasated blood are the source of the abnormal quantity of urobilin found in the connective tissue, skin, and urine.

It might be stated that in these cases the feverishness, and not extravasated blood, was the cause of the urobilinuria. In such cases, however, it is never present in such large quantities. These observations seem to be of considerable importance in the diagnosis of what is often an obscure condition, and though everyone has not a spectroscope at command, still the 'chemical test is easily carried out and is very delicate, and when much of the pigment is present, the colour of the urine alone is sufficient for diagnosis.

(b). *Their Treatment.**—Since under an expectant treatment these cases generally do well, whilst operative measures have been followed by most unfortunate results, hæmatocele has come to be very generally regarded as a "noli me tangere." Bandl only admits two causes for interference—(1) when the tumour has for months remained unreduced, and the patient is confined to bed by the intense pain attending it; and (2) when it shows signs of suppuration or decomposition of its contents.

In 1881, however, Dr. A. Martin (Berlin) brought forward at the *Naturforscherversammlung*, in Strasbourg, three cases in which he had performed laparotomy for the relief of this condition. Of

* Zur Behandlung der Blutergüsse hinter der Gebärmutter von Dr. Paul Zweifel. Archiv für Gynäkologie, Bd. XXII. Beitrag zur Lehre von der operativen Behandlung des Hæmatoma periuterinum extraperitoneale von Dr. J. Düvelius. Op. cit. Bd. XXIII.

these two died—one of collapse, the other of septic peritonitis, and one recovered. The following year he published another successful case.* These results induced Zweifel to publish four cases which had been treated by him with a modification of the ordinary vaginal method, only one of which died. He proceeds in the following manner:—Firstly, he cuts through the vaginal wall only; thus all hæmorrhage can be checked before opening the tumour. The edges of this incision are then separated by means of volsella, and the tissues torn through up to the capsule. A fistula knife is next thrust through this, and a finger introduced to act as a guide, along which Simpson's metrotome is passed, and with this the capsule is opened sufficiently to admit two fingers. The sac is then thoroughly cleared out, and a peculiar canula made of glass or vulcanite, and having an olive-shaped extremity to prevent its slipping out, is used for continuous irrigation. This method, he claims, is safer than the simple incision; by opening the sac by two distinct steps hæmorrhage can be completely controlled; and by the constant antiseptic irrigation, putrefaction is prevented. He claims superiority, especially to the treatment by laparotomy, since only 1 out of 4 of his cases died. He is quite in error, however, in stating that *all* Martin's patients died, for, as we have already stated, 2 out of 4 recovered. Dr. Düvelius, Martin's assistant, now publishes 4 more cases, all of which recovered, so that the average mortality is now the same by both methods—Zweifel, 4 cases and 1 death; Martin, 8 cases and 2 deaths.

All Dr. Martin's cases were extra-peritoneal hæmatomata. His method of operating was to open the abdomen, draw up the intestines out of the pelvis, or, if they were adherent, to separate them until the sac was seen, which was easily distinguished by the dark blood showing through. It was next opened freely, emptied, and the walls energetically cleaned. A drainage tube was then passed from the cavity into the vagina, and an attempt made (which did not, as a rule, succeed) to close the former above. The peritoneum was most carefully cleansed, and the abdomen closed. No antiseptic irrigations were subsequently employed.

Düvelius prefers the abdominal to the vaginal method, because in the latter, should hæmorrhage take place into the sac after it has been opened, the vessel could very rarely be secured, and there would then be no alternative but plugging the cavity—a most perilous proceeding, owing to the weakness of the wall which

* *Zeitschrift für Geburtshülfe und Gynækologie*, Bd. VIII.

separates it from the abdominal cavity. The fear of inducing a hæmorrhage which might prove uncontrollable will induce the operator to proceed with great caution, and thus lead to an imperfect removal of coagula, and certainly would prevent anything like an energetic scraping of the walls of the sac. If, on the other hand, the operator does undertake a thorough clearing of the cavity, then he incurs the danger of perforation of the sac-wall and escape of decomposed blood into the abdominal cavity. This actually did occur to Zweifel, and was the cause of death in his fatal case.

In the superior operation, on the other hand, the interior of the cavity can be easily inspected and bleeding completely controlled. It can also be thoroughly cleared out, upon which the cure, to a great extent, depends. The more the amount of coagulated blood remaining in the cavity and attached to its walls, so much more tedious will the case be, because this must be got rid of either by disintegration or suppuration.

Zweifel believes that the operation, performed after his method, is no longer a very dangerous one, and need not be reserved for those cases in which there is no alternative. From an analysis of cases published in various journals, he concludes that the dangers of operation compared with the expectant plan have been exaggerated. Thus he has collected 26 cases treated by incision and injection, of which 4 died; 3 deaths followed immediately the washing out of the cavity, and were probably caused by it. Still, allowing 4 deaths out of 26, we have a mortality = $15\cdot3$ per cent. Out of 66 cases that were punctured, 10 died = $15\cdot1$ per cent.; so that puncture is not appreciably safer than incision. Out of 129 cases treated expectantly 24 died = $18\cdot4$ per cent. It might be urged against these figures that more severe than simple cases occur in medical literature. This he considers to be advantageous for comparison, since only severe cases come to operation.

As to the estimates of others, Voison places the proportion of fatal cases under expectant treatment at $33\cdot3$ per cent.; of those operated upon, $37\cdot5$ per cent. Barnes collected 41 cases treated expectantly, with 7 deaths = 17 per cent. Bernutz and Goupil collected 62 cases: 44 died; 18 recovered. Of these, 17 were punctured, with 8 deaths. Eight opened spontaneously, of which 3 died. Of the remaining 37 treated expectantly, 33 died = 89 per cent.

It must not be supposed that either of these operations is recommended for cases of minor gravity. The rules laid down in

Which of these methods, Martin's or Zweifel's, is the best can be decided only by future experience.

According to Dr. Schmidt, the pathological changes in the uterine mucous membrane have not been exhaustively described. This cannot be wondered at, since even its physiological changes are still matter for discussion; neither is it always possible to distinguish what is normal from what is pathological. Many things combine to increase these difficulties, such as the complicated structure of the membrane itself, the similarity of the symptoms attending its diseases, and the difficulty of combining accurate clinical observation with microscopical examination. He proposes the following classification:—

- a. Chronic hyperplasia.**
- b. Lympho-sarcomatous growths.**
- c. Myxomatous** ,,
- d. Sarcomatous** ,,
- e. Adenomatous** ,,
- f. Papillomatous** ,,
- g. Carcinomatous** ,,

* Düvelius. Zur Kenntniss der Uterusschleimhaut. Zeitschrift für Geburtshülfe u. Gynäkologie, Bd. X. 1884. J. Schmidt, M.D. A Contribution to the Pathology of the Mucous Membrane of the Uterus. Am. Jour. of Obstet. Jan. 1884.

Dr. Düvelius has endeavoured, and with considerable success, to clear up the uncertainty which surrounds these important questions. In 22 female subjects, aged from twenty to forty years, he scraped out the uterus, within from 15 to 24 hours after death, exactly as it is done on the living, the curette being pushed up to the fundus, and the walls scraped until a peculiar sound was heard resembling that which would be produced were the palm of the hand to be treated in a similar manner. The organ was then removed, hardened in spirit, and sections made with a microtome. The microscopic examination showed the uterine muscle more or less completely deprived of mucous membrane; in some places it lay quite bare, in others small particles of epithelium remained attached to it, consisting of interglandular tissue and remains of gland tubes. Fully intact mucous membrane, on which the superficial epithelium remained, was nowhere found. These experiments prove that a more or less deep injury of the mucous membrane is effected, but that it is not possible to remove its ultimate particles; and that such a thorough denudation must afford ample material to make a certain diagnosis with the microscope of any diseased process which might be affecting the membrane, because all morbid processes engaging the uterine mucous membrane must certainly have reached the superficial layers before giving rise to symptoms, and would, therefore, always be removed by the curette and available for examination.

With a little practice the curette can also be used as an instrument of touch, so that one can scrape those places more especially which seem to be most diseased.

To illustrate the value of this method, he mentions five cases where the diagnosis was made by it alone—in two, carcinoma of the body; in two, malignant adenoma; and in one, sarcoma of the uterine mucous membrane were discovered. In all the organ was extirpated, and the diagnosis confirmed by the subsequent examination of the specimens obtained. In four other cases the scrapings showed admirable specimens of endometritis adenomatosa, but as the profuse hæmorrhages could not be controlled in any other way the uterus was extirpated. Here also the diagnosis was verified by subsequent examination. In several other cases where curetting was undertaken for supposed endometritis, the scrapings proved its presence. From this, as well as from all that he has seen and heard, he believes that it may be confidently stated that the nature of any disease of the uterine mucous membrane could be diagnosticated by

the microscopical examination of the material obtained by energetic curetting of the cavity.

In connexion with the second point—namely, the results of the operation, two interesting questions suggest themselves:—1st. Whether, after this almost complete removal, regeneration of the membrane be possible? 2nd. Whether this new membrane bears the normal relations to itself and the muscular tissue, or if cicatrices are formed?

He adduces two cases which help considerably towards clearing up these points. The patients were women near the climacteric period, who had been repeatedly curetted and cauterised for metrorrhagia, but without benefit. They were at last reduced to such an anæmic condition that, as a last resource, the uterus was removed. In one of these cases the last scraping took place two, in the other four months' previously. The microscopic preparations obtained after extirpation showed no trace of the previous energetic curetting. The newly developed membrane was related to the muscular and intermuscular connective tissue in the usual manner, nor was a cicatrix to be found anywhere in the mucous membrane, or between it and the muscle. This is what might have been expected if the investigations of Leopold as to the condition of the mucous membrane during menstruation be correct; and if the new formation grows from beneath, and not from the sides, no cicatrix could possibly form.

The third objection—that by this process normal pregnancy and childbirth are prevented, is easily dismissed by the fact that in numbers of cases both have occurred.

The exact percentage of cases in which pregnancy followed this kind of treatment could not, for obvious reasons, be ascertained; a large number of cases which were cured did not turn up again—their history was therefore lost; others were already at the climacteric period—a time when fungous and glandular endometritis are especially frequent; and others again were perhaps married to old and impotent husbands. The number of cases in which pregnancy followed curetting was in private practice proportionally much larger than amongst hospital patients, and was evidently due to neglect in the latter in not reporting its occurrence. Between 1879-1883, he recorded 60 cases in which pregnancy occurred in women who had been curetted. In 11 of these it was done on account of incomplete abortion; in the remaining cases for disease of the endometrium, or for sterility. Sixteen times the diagnosis of endo-

metritis was confirmed microscopically. Out of these 49 cases 32 had previously borne children; 17 had not. Out of the 60 pregnancies 6 ended in abortion. Four of these were women who were operated upon in consequence of a previous miscarriage, and of these 3 conceived again after a second curetting. The recurrence of abortion in these cases is not attributable to the scraping, but rather to the persistence of the condition which occasioned it before.

With such a large number of cases in which pregnancy followed very thorough curetting, it may be confidently stated that this proceeding does not cause sterility, but rather tends towards its cure. Some of these women had been married for years without children, and became pregnant shortly after the operation.

ARTERITIS AS A SEQUELA OF ENTERIC FEVER.

AN interesting communication on the above subject has been made to the *Revue de Médecine* (vide Nos. 1 and 2 for 1884) by M. Barié. The conclusions at which he arrives may be summed up as follows:—Acute arteritis after typhoid fever is especially liable to occur in the main arteries of the legs, and is generally unilateral. It comes on at the commencement of convalescence, just as the patient is beginning to walk again, and is as likely to follow a mild attack as a severe one. He makes out two forms—viz., acute obliterative arteritis, and acute parietal arteritis, but they differ only in degree. The former is the result of a cellular infiltration of all the coats of the artery with a roughened state of the lining membrane; this is followed by the formation of a thrombus firmly adherent to the walls. If the obstruction is complete and there are no anastomoses, dry gangrene speedily makes its appearance. The chief symptoms and signs are pain along the course of the arteries, sometimes limited, at others extending the whole length of the limb, and increased by pressure or exertion; marked diminution in the fulness of the pulse wave; swelling of the affected limb without œdema or redness, but followed sometimes by a violet mottling; lowering of the temperature of the affected limb; and lastly the appearance of a hard and painful cord along the course of the artery. The parietal form is to be distinguished from the above by the general mildness of the symptoms, the absence of the cord-like swelling or dry gangrene, and by the fact that recovery always takes place. As to whether the symptoms might not be due to embolism, could only be decided by a careful examination of the heart, and a search for other signs of embolism. M. Barié is of opinion that typhoid arteritis results from two principal factors—viz., local and permanent irritation by parasitic and infectious germs, and profound disturbance of the vasomotor nerve supply.—*Medical Times*.

PART IV.
MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. BANKS, M.D.
General Secretary—W. THOMSON, M.D.

SUB-SECTION OF STATE MEDICINE.

President—THOMAS W. GRIMSHAW, M.A., M.D.
Secretary—STEWART WOODHOUSE, M.A., M.D.

Thursday, April 10, 1884.

The PRESIDENT in the Chair.

*Antiseptic Experiments in a Mortuary Vault.**

DR. CAMERON read a paper on Antiseptic Experiments in the Vaults of St. Michan's Church, Dublin, celebrated for their antiseptic properties. Bodies dry up into a desiccated mass rather than decompose when deposited in these vaults. The author placed an infusion of melon in Tyndall's tubes, and having submitted them to both a high and prolonged temperature so as to sterilise the liquid, he placed a number of them in a vault of the church which seemed to possess the greatest antiseptic properties. The tubes were deposited with great caution, and in such a way as to occasion the least possible disturbance of the atmosphere. The extremities of the tubes were broken by means of hot forceps, and the vault was kept locked up for six weeks; they were then removed from the vault. Seven of the tubes presented no change; but in the remaining five there was great turbidity, owing to the development of mycelium, &c. In the case of the liquid kept in the unbroken tubes at the laboratory of the Royal College of Surgeons, no turbidity was noticed in their contents. On nipping the ends of the tubes of those kept in the laboratory, and the sound ones brought from the mortuary vaults, turbidity set in under forty-eight hours. The author did not venture to draw any positive conclusion from these experiments, but their results seem to show that

* This paper appeared at length in the number of the Journal for May, 1884. Vol. LXXVII. Page 408.

the preservation of the liquid was due to the great freedom from dust which he noticed in the vault. Franklin had found that in the higher Alps organic infusions remained for a long time freely exposed to the air without undergoing decomposition—a fact attributed to the freedom of the air at great altitudes from dust, which, of course, included germs of various kinds.

DR. COSGRAVE believed the temperature of the vaults was very uniform, and there being no floating particles, that might prevent the vegetable infusion turning.

DR. MORE MADDEN referred to the famous vaults near Palermo, where two miles of galleries were lined with the dead bodies of monks. The sides of the galleries and the dead bodies, which were in a state of desiccation, were coated with dust. Of the character of the dust he knew nothing; but the antiseptic properties of the galleries were ascribed to the peculiar dryness of the air, and also to the nature of the soil in which the galleries were excavated.

DR. HENRY KENNEDY asked whether any experiments had been made in places selected for their dryness to test the question of dryness as a factor. The temperature being exceedingly uniform was an obvious cause.

DR. WOODHOUSE asked whether, as a matter of fact, the vaults of St. Michan's had a dry atmosphere. Unless the air there differed from that of other subterranean excavations with which he was acquainted in Dublin, he doubted its dryness.

DR. C. F. MOORE inquired what was the chemical change, whether desiccation or saponification, such as took place in bodies preserved in bogs and other places.

The PRESIDENT said there was but one opening into the vaults—by a heavy iron trap-door. The stone in the vaults was not of a dry character, being calp limestone.

DR. CAMERON, in reply, said there was a good deal in what Dr. Cosgrave had suggested—that the effect was due chiefly, if not altogether, to the uniformity of the temperature, which hardly varied. If there was no expansion by an increase of temperature, or no contraction by a fall of temperature, a liquid would be the same as when sealed. At night the temperature must have fallen a little, and some little movement of air have taken place; but, even taking that view, it was the absence of dust that caused the preservation of the contents of the tube. Seven tubes remained perfectly clear, and five became turbid. The air and dust must have got into the latter. As a matter of fact, the vaults were dry. When vaults were not dry, moulds made their appearance, as at present in the vaults of the New Markets. He had often heard the antiseptic properties ascribed to a peaty bottom. No doubt, in Christ Church-place and High-street, at the opposite side of the river, the houses were built on piles, owing to the existence of peat bogs; but that was not the case with

Church-street, where there were thirty feet deep of limestone gravel. The dryness and absence of dust were factors in the preservation of the bodies. In the vaults of St. Michan's, which were ten feet below the surface, he could see the sunbeam enter a little, but there did not seem to be anything like the usual amount of dancing particles in it. He was struck by the almost total absence of dust, none resting on the coffins.

The PRESIDENT hoped Dr. Cameron would continue his experiments.

Increase of Insanity.—Suggested Reform of the Lunacy Laws and Practice.

DR. T. MORE MADDEN, having recently read a paper in another Section of the Academy on certain mental and nervous disorders, now called attention to other aspects of the subject, offering further evidence of the general prevalence and increase of insanity in all classes, and more especially amongst women, in whom it is frequently traceable to cerebro-nervous disorders originating in reflex irritation from utero-ovarian causes. These disorders, however, are very frequently unrecognised and neglected in lunatic asylums, the result being that many women are needlessly confined or improperly detained in such institutions. The present administration of lunatic asylums, and the laws by which it is directed, affording scope for the possible occurrence of abuses, he made suggestions for the improvement of the administration and some needed reforms in the lunacy laws. Although the recent increase of insanity had been disputed as a popular fallacy, even by psychological authorities, including the Lunacy Commissioners, the statistical evidence of the fact was incontrovertible. At present 1 in every 414 of the population of England and Wales is a registered lunatic, while in 1800 there was only 1 lunatic in 7,300 of the population. In 1806 there were 2,248 lunatics in England and Wales; in 1819, 6,000; in 1823, 8,000; and in 1826, 14,000. In 1845 there was 1 in 800 of the population insane, and thirty-seven years later 1 in 414, or 76,765 lunatics, comprising 42,482 females—being an increase on the preceding year of 1,182 females, and 676 males. In Ireland since 1851 the population decreased 12 per cent., and there has been an increase of 41 per cent. in the number of lunatics. In 1851 the number was 9,980, or 1 in every 1,291; but last year it had risen to 13,820, or 1 in 369. The increase of lunacy had been greater amongst women than men, owing to the influence of uterine or peri-uterine causes of reflex cerebro-nervous irritation. There were also general moral and social causes. The facility with which any person can be legally confined as a lunatic is indefensible, seeing that any two of the most inexperienced of the 24,000 practitioners on the medical register can virtually consign any man or woman to a lunatic asylum. That this power was liable to abuse he illustrated by cases in his own experience. He, therefore, suggested that the power of signing certificates should be restricted to certain officially appointed

medical inspectors of lunatics; and that, in the case of alleged female lunatics, one of the inspectors should be a physician with some experience of the special functional disorders, the reflex consequences of which may either simulate or eventuate in insanity. The lunacy laws differ in England, Scotland, and Ireland; and the pauper lunatic asylums in England and Wales involve an expenditure of upwards of a million, while those in Ireland cost £200,000, according to last year's account. The reform of abuses, and the improvement of curative treatment, could be attained with diminished cost to the public. Let all the lunatic asylums become public property, and be placed under one central official administration in each county. The compensation of proprietors of private asylums would not be a serious consideration, considering the profits that would arise from continuing those institutions as first or second class state asylums, and ultimately these profits would relieve the cost of the general public lunacy system. He suggested the abolition of the office of resident medical superintendent of public asylums, whose functions he would transfer to lay governors or masters, leaving the resident physician free to devote himself entirely to strictly professional functions, in which he should be assisted by a staff of extern or visiting medical officers. A large number of the chronic and harmless patients of the weak-minded or semi-imbecile class would be cared with greater comfort to themselves, and less cost to the public, outside the walls of lunatic asylums. As an amendment of the laws relating to so-called criminal lunacy, he suggested the adoption of a law similar to the sixty-fourth article of the French penal code, and the appointment of medical assessors in all trials in which the plea of insanity is advanced.

DR. DOYLE hoped the gentlemen connected with private lunatic asylums would state their views. Human nature was weak, and those who had private asylums could not be blamed for trying to keep good-paying patients as long as possible. He knew of a case pronounced by the keeper of a private aristocratic institution as incurable; but the patient, being unable to pay, was placed in a public institution, and in six weeks' time was discharged. Within the past year four or five cases of lunacy came under his care, in three of which he detected uterine disorder, but he could not lay too much stress on it as the exciting cause. Females got into a nervous state frequently; but, in the majority of cases, where there was not hereditary predisposition, the lunacy was traceable to some local cause, the same as in *delirium tremens*. From what he knew of them, he hoped private asylums would be abolished.

DR. NEVILLE took considerable interest in lunacy since his first professional appointment as *locum tenens* in one of the large county asylums. The effect the diseases of the female genital organs might have in the causation of mental trouble was apt to be exaggerated by gynæcological specialists, and the question of lunacy was sometimes looked at through

gynæcological spectacles. Where it was a case of one specialist attacking another he discounted a good deal of the criticism. He knew some of the gentlemen who gave attention to diseases of the mind to have studied those diseases as earnestly as specialists did in any other branch of medicine or surgery. The great trouble taken both in public and private asylums could not be excelled by any specialist. As to the increase in lunacy, shown by the figures quoted, it should be remembered that the causes of lunacy had greatly increased—*e.g.*, the wear and tear of modern life. On the other hand, the struggle for existence made it all the more necessary to get rid of the drones of society; and, certainly, lunatics, being of no use to themselves or their families, were drones in society, and their families would be anxious to put them under restraint. Now-a-days medical education had advanced, and with it the diagnosis of insanity. Specialists in diseases of the mind would say there had been just as much improvement in the treatment of insanity as in obstetrics—indeed he saw a complaint made in connexion with the meeting of the British Medical Association in Belfast that there had been no advance made in obstetrics for several years, but he did not admit the truth of either allegation. On the contrary, he believed there had been an advance. The use of opium in melancholia had a remarkably beneficial result. Dr. More Madden had adduced the statistics of Bethlehem 100 years ago, and, contrasted with those of the present, the cures were then two out of three, while now the proportion was much more unfavourable. But he did not believe in the statistics of 100 years ago, nor yet in the treatment. Could any sane man believe that the exhibition of the patients to the public at 2d. or 3d. each was better treatment than that resorted to at the present day? In the majority of cases where disease of the female genital organs gave rise to insanity, there had been a hereditary tendency to insanity, and that would come out just as if she had disease of the liver or the lung. Disease of the genitals was, no doubt, an exciting cause, but it required the background of a hereditary predisposing cause. He did not agree with Dr. More Madden and Dr. Doyle about doing away with private asylums, believing, as he did, that in those establishments the insane were as safe and as well cared for as they would be if confided to a corporation or the Government; nor did he agree with Dr. More Madden's idea in reference to the medical superintendents of county lunatic asylums. As the head of the institution, the superintendent was properly a medical man, having a medical assistant, and a crowd of officials under him to carry out the details. He was well paid for his work, and gave his whole time to it; and if, in the task of supervision, he missed the discharge of some of his medical functions, it was not greatly to be regretted. As a rule, consulting physicians who resided outside the institution knew nothing whatever about lunacy, being general practitioners without any special knowledge.

In his own experience a ridiculous illustration of this occurred where a consulting physician in three different cases—one of asthma, one of acute mania, and the third of injury to the knee-joint—ordered a blue pill and a black draught for each.

DR. HENRY KENNEDY had not the same experience as Dr. More Madden of the enormous increase of lunacy. Registration had the effect of bringing out cases which twenty-five or thirty years ago would not have been noticed at all. He did not see why private asylums should not be continued. That abuses might exist would be allowed, but there were competent inspectors to visit private asylums and investigate their management. As to treatment, cod-liver oil had been found almost a specific where there was a tendency to insanity, indicated by such symptoms as restlessness and refusal of food on the part of persons advanced in life. In all those cases death almost invariably ensued from tubercular phthisis. Dr. More Madden was, in some respects, right regarding the stress he laid on uterine irritation.

The PRESIDENT did not think the statistics justified the extreme conclusion drawn with regard to the increase of lunacy. The statistics of 100 years ago were not of much weight. Independently of that fact, it was only recently lunatics had been brought in considerable numbers into a position in which they could be tabulated. The great asylums did not exist, though lunatics may have existed. In Ireland the statistics improved with the development of the system of collecting the information, so that each decennial Census was superior to the preceding. In 1851 the difficulties to be overcome were so great that an enormous number of errors were committed. Since then the population had been prevented from increasing chiefly by emigration, and the lunatics did not emigrate, nor did the old nor the very young. Consequently considerable allowance must be made for these in the calculation. He thought Dr. More Madden had taken too severe a view of the mode of conducting asylums. The functions of the superintendent were various, but the director of any great concern for the treatment of disease should be a medical man, even if he had to abdicate his medical functions. No doubt the function of hotel-keeper performed by the owners of private lunatic asylums was derogatory to the profession; but all the same, he was strongly in favour of private asylums. A lunatic able to pay for his support should not be treated at the public expense. There were wealthy lunatics, and their being unfortunate enough to be mad was no reason why they should be deprived of the advantages of people of wealth. It was only in private asylums they could have those advantages.

DR. MORE MADDEN thanked the Sub-Section for the reception of his paper.

The Sub-Section then adjourned.

MEDICAL SECTION.

President—WILLIAM MOORE, M.D., President, K.Q.C.P.

Sectional Secretary—A. N. MONTGOMERY, M.K.Q.C.P.

Friday, May 16, 1884.

DR. HENRY KENNEDY in the Chair.

Living Specimens.

DR. J. M. REDMOND.—(1) Case of progressive muscular atrophy in a boy, aged ten; (2) Case of hemiplegia following chorea.

Specimens exhibited by Card.

DR. J. HAWTREY BENSON.—An aneurism of thoracic aorta, showing complete obliteration (by pressure) of the superior vena cava. DR. C. J. NIXON.—Cerebral ramollissement. DR. H. C. TWEEDY.—Microscopic slides showing achorion Schönleini. DR. J. M. REDMOND.—Mitral stenosis with cardiac hypertrophy.

Double Optic Neuritis with Paralysis of both Olfactory Nerves and Sensory Division of Right Fifth Nerve.

MR. JOHN B. STORY exhibited a patient suffering from atrophy of both optic nerves and paralysis of the olfactory nerves, and of the sensory division of the right fifth nerve. The patient was an unmarried woman, aged thirty-two, who had enjoyed good health till the winter of 1882–83, when she began to suffer from a violent pain in her head. The pain later on became so violent as to confine her to bed, where she remained for some months in the spring and summer of last year. She became after some time completely unconscious, and when her consciousness returned (about July, 1883) she found her senses of sight and smell totally lost, and sensation absent from the right side of her face, and the little finger and ulnar side of the ring finger of her right hand. She noticed a defect in the sense of taste at the same time in the anterior portion of the tongue at the right side. The examination of the patient completely established the truth of her statements, with the exception of the paralysis in the skin of the fingers, which did not appear to have any real existence, at least then. Corneal and conjunctival sensibility was completely absent, and the palpebral and lachrymal reflexes connected with it, while the cornea itself was perfectly healthy, and the tension of the right globe rather above that of the other eye. He considered the case to be one of cerebral tumour, but could not assign any definite locality to the supposed new growth. The atrophy of the nerves was undoubtedly

produced by optic neuritis. He commented on the various theories explanatory of the connexion between pupillitis and brain disease, and upon the current views as to the production of neuro-paralytic keratitis. The secretion of saliva from the right parotid gland was, so far as careful testing with vinegar could ascertain, completely abolished, that from the left gland being perfectly normal.

The CHAIRMAN would connect the symptoms with a tumour at the base of the brain, implicating particular nerves or parts. There seemed to be less vomiting in this case than usual. He asked had iodide of potassium been tried?

DR. C. J. NIXON considered that if Mr. Story was perfectly satisfied there was a lesion of both nerves of smell, and at the same time a lesion affecting some of the fingers of the hand and the forearm, it would be perfectly possible to account for all the phenomena that existed by the idea of an isolated tumour. One of the most difficult senses to test as to its being intact was the sense of smell. It was remarkable to find that with the implication of the sensory division of the fifth nerve there was complete loss of the sense of taste on the corresponding anterior portion of the tongue. This was directly in opposition to a case recorded by Althaus, in which he excluded the fifth nerve as administering to the sense of taste in the antero-lateral region of the tongue.

MR. STORY, in reply, said the non-persistence of pain not infrequently characterised the growth of tumours on the brain, and the cessation of vomiting too had been not infrequently noticed. He had tried iodide of potassium for some weeks without alteration in the symptoms. In answer to Dr. Nixon, he pointed out that they were all familiar with the fact that loss of sense of smell followed paralysis of the sensory portion of the fifth nerve. In this case a probe might be put up the right nostril without the slightest effect, but if the left was touched in the same way she shrank with pain. Assafoetida, valerian, oil of cloves, or ammonia, had no effect on the right side, whereas on the left she exhibited the movement consequent on inhaling strong smelling salts.

Reflex Paralysis.

DR. C. J. NIXON read a paper on reflex paralysis, in which he summarised the different views which had been held in favour of and against the theory of this form of paralysis. He first examined the class of cases of paralysis which are usually cited as caused by reflex influence—viz., amaurosis from affections of the fifth nerve, and paralysis of the orbital nerves from a like cause. Having shown that those cases may be explained without reflex mechanism, he next examined the evidence as to the existence or non-existence of reflex paraplegia. Examining the views of Brown-Séquard, Gull, Leyden, and others, and the experimental observations on the subject, he directed attention to the absence of

any true conception of the mode in which paralysis by reflex action is brought about, except we understand it to be produced by inhibitory influence; so that reflex paralysis, if it have any meaning, must be inhibitory paralysis. This name had, at least, the advantage of suggesting the way in which the phenomena of disease are produced. Dr. Nixon thought, however, that there was no necessity to admit the existence of an inhibitory paralysis, as taking, for instance, the cases recorded of reflex paraplegia—they could arise in three different ways—as an ascending neuritis which sets up myelitis, from extension of inflammation along the nerves to the spinal cord, or from a lumbo-sacral neuritis which descends along the sciatic nerves.

DR. MACSWINEY called attention to the so-named reflex paralysis following wounds of which Weir Mitchell had given many examples, including paralysis affecting the upper extremities, right or left, where a wound had been received in the lower extremities, right or left.

DR. BENNETT considered Dr. Nixon's paper open to the objection characterised by lawyers as pleading double. In his hospital experience Dr. Nixon had never seen a case of reflex paralysis, while he quoted instances of inhibitory nerve influence, which he held to be another name for reflex paraplegia. It was difficult, therefore, to follow his argument.

DR. WALTER G. SMITH, looking at Dr. Nixon's conclusions as a whole, said his views must in a great extent be felt to be in accord with those of modern teaching, supported by the pathology of nervous diseases; so that very few, if any, physicians or surgeons would now accept Brown-Séguard's teaching in his interesting lectures on paralysis of the lower extremities. To some the doctrine of reflex paralysis was a convenient one, as it explained away so many obscure causes. But he reminded Dr. Nixon of the danger of the logical fallacy of taking the part for the whole. Dr. Nixon, as an iconoclast, had proceeded to demolish the theory of reflex origin. It might be true that he had done so in part, but it might not be true he had demolished the whole, especially considering their enormous ignorance of nervous physiology. Caution must, therefore, be observed in dogmatising too strictly as to what could or could not happen in the domain of the nervous system. Dr. Nixon did not allow sufficiently for the extremely important effects of local sensory irritations, which include both the skin and internal skin, or mucous membrane—in other words, stimulation of a limited area of the sensory nerves. The curious thing was, that no matter what part of the skin was stimulated similar effects followed. It was known that deaths occurred during the early stage of inhalation of anæsthetics. Again, tickle the inside of the thighs, and in a bright light the pupils would be seen to dilate. It was difficult to say what channel that influence travelled up, yet it was the influence of reflex action—indeed it was notorious the number of channels by which the vomiting centre might be approached. Modern

teaching had undoubtedly narrowed the field of reflex diseases; and while they should be thankful to those inquirers who had cleared away so much obscurity, it was too soon to urge anything positive as to the phenomena being a reflex arrest of function without speculating that the mechanism by which it was produced might not arise in the body.

The CHAIRMAN called Dr. Nixon's attention to a clinical aspect of the question. He had himself put on record a host of cases of children from five to seven months old, who had suddenly lost power of one arm, and in these the scarification of a gum or an active purge produced a cure at once. Thus the reflex paralysis was in those cases due to irritation of the mouth or the accumulations in the intestines.

DR. NIXON replied that he had used the term "inhibition" first as a step in getting rid of the theory of Brown-Séquard, that the paralysis was due to reflex spasm of the blood-vessels of the spinal cord. If not to that, it was due to something else—a number of things, and he took inhibition as one to which it might be due; and he had said there was no necessity for introducing this explanation of the theory of disease at all, inasmuch as it had been established that the paraplegia assumed to be reflex was due to causes which had been ascertained as an ascending neuritis or a descending neuritis, or a neuritis established by the travelling up of inflammation along the veins. The recognised explanation of the results of the operations he had cited was that they were due to what was understood as the phenomenon of inhibition. If they were not satisfied that the cases of paraplegia recorded had most distinct and positive pathological lesions to explain them, then the theory of paralysis by inhibition was the one that would satisfy the scientific requirement best. But in the absence of necessity there was no use introducing a new term into medical pathology. With regard to Dr. Walter Smith's observations as to the effect of stimulation, Brown-Séquard had mentioned that peripheral stimulus might act in three different ways—it might influence secretion, or the condition of the blood-vessels, or the muscles. In his paper before the Section he had confined his observations to the condition of the muscles that might be said to be influenced by peripheral irritation. He did not discuss the condition of the blood-vessels, such as would be brought about from irritation of an extensive surface of the skin following a blister, &c. Dr. Smith seemed to have dealt with spasms as paralysis. There was not the slightest doubt that peripheral irritations of various kinds—worms in the intestines and teething—produced convulsive phenomena; but it was quite a different thing with irritation transmitted to the cord. Irritation was supposed to pass to the motor area, and yet the usual result was not attained. Although he had seen a great many cases of paralysis, he had never seen one that he could connect with any of those cases of local irritation such as teething, or that got well on suddenly lancing the gum, and he did not see why

paralysis should be cured by such a simple procedure. The object of his paper was to show that such a thing was a physiological impossibility, and he did not believe they had records of paralysis produced by peripheral irritations, such as worms in the intestines or teething.

On the motion of DR. GRIMSHAW, the remaining papers on the *agenda* were, for want of time to be read, referred to the Publication Committee.

The Section then adjourned till next Session.

THE PROPOSED MEDICAL SECTION OF THE POSTAL MICROSCOPICAL SOCIETY.

IN the June number of the Journal (Vol. LXXVII., page 515) we referred to the proposed formation of a "Medical Section" in connexion with the Postal Microscopical Society, the object being to furnish members of the medical profession with such slides as they are naturally most interested in, and such notes in relation thereto as will not only anatomically describe the slides under observation, but will, where practicable, give a full history of the cases from whence they were taken, duration of the disease, the methods of treatment adopted, and every other matter of interest likely to prove of any educational value to all succeeding members. To accomplish this it is proposed that every member shall send to the Hon. Secretary for circulation six slides (or any multiple of six) with full descriptive notes thereon, to be written in the book or books provided for that purpose, and each member receiving the same will be asked to add all that he can in further elucidation of the various subjects under discussion. Boxes containing twelve slides will be circulated at regular dates, and in such a manner that each member should receive one at fortnightly intervals. When each set of slides has been seen by all the members it will be returned to the original contributors, who will be asked for a fresh supply, and that each series (or set) may circulate for a whole year it is necessary that at least *fifty* members be enrolled. Several have already sent in their names. As the fees for the Medical Section (separately) will be the same as for the General Section, it is thought desirable that the two sections shall run concurrently; the first year's subscription, therefore, will carry on to the 30th September, 1885, and will after the first year become due on the 1st October in each year. The first session will commence as soon as a sufficient number of slides have been received. Members of the Medical Section will be at liberty to join the General Section also on paying *half* the annual subscription extra. A copy of the *Journal of Microscopy* is presented to every member quarterly as published. The Honorary Secretary is Mr. Alfred Allen, of No. 1 Cambridge-place, Bath.

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1883-84.

President—PROFESSOR DILL, M.D.

Hon. Secretary—WILLIAM G. MACKENZIE, L.R.C.P. & S. Edin.

PROFESSOR DILL in the Chair.

Brief Observations on the Early and Forcible Dilatation of the Os Uteri, as a more Successful Method of Treatment in "Placenta Prævia." Illustrated by an unique case, at which Drs. Kevin and J. C. Smyth assisted. By Dr. JAMES SMITH (Shankhill Road).

MR. PRESIDENT AND GENTLEMEN,

Permit me, before proceeding to read the few notes I have written out on the subject of "placenta prævia," or "placental presentations," to offer some apology for again obtruding myself so soon on this Society. Indeed I had no intention of occupying any of your valuable time on the present occasion, had it not been for the importunities of your energetic Secretary, Dr. MacKenzie, who insisted on my hunting up an obstetric case which might add a little variety, and, perhaps, some interest, to his programme for to-night. Moreover, he intimated to me that this would probably be the last meeting of the Session, and used other persuasive arguments which left me no alternative but to comply—hence my presence here as a contributor this evening. I have chosen this subject (placenta prævia) for three reasons—viz., 1st. Because my brief observations may serve as an appendix to Professor Dill's remarks on the same subject made here, I understand, on the last night of meeting. 2nd. Because I was assisted in the case by two members of this Society, who will likely have something to say on the merits or demerits of the operation. 3rd. Because the plan of treatment and mode of delivery differ somewhat from the usual methods. I consider it unnecessary to waste your time discussing the various *supposed* causes of "placenta prævia," or "placental presentations," and the endless varieties of treatment and operations recommended in our numerous midwifery text-books. Suffice it to say that the causes are not yet manifest, and the treatment, so far, has been attended with great mortality. Statistics at present show a death-rate among mothers of 1 in 3, while 65 per cent. of the children are still-born. These facts prove that there is room for improvement in the treatment of "placenta

prævia." Having said so much by way of preface, let me now indicate the plan of procedure I have adopted on two occasions, and in each instance to the salvation of both mother and child.

To some people it may seem rather "heroic" treatment, but I am satisfied that the results justify the means, which consist in thrusting the hand through the os uteri at an earlier stage than usually recommended. However, this proceeding looks worse than it really is, for rigidity of the os uteri rarely co-exists with placenta prævia. On the contrary, the whole uterus is atonic, soft, and flaccid, and the os participates in the general relaxation; and, when the latter has attained the size of half-a-crown, the hand is forced through it with as little difficulty as through an elastic ring. It will be unnecessary for me to describe the two cases I have referred to, inasmuch as the details of treatment and operation are precisely similar, so that I shall content myself with narrating only one, which is unique in that it presented a contracted pelvic brim as well as the placental presentation. This abnormality on the sacrum retarded delivery, but it did not necessitate recourse to any kind of instrumental aid. I now proceed to give you some details regarding this interesting case, which are these:—On the 2nd of April, 1883, I was awoke from my slumbers about 6 a.m., and was informed that Mrs. C. (whom I had attended early the previous year in her first confinement) had had a "dreadful flooding," and was in a faint or swoon. I dressed myself with expedition, and was promptly at her bedside. I found ample corroboration of the messenger's statement to me in the perilous condition of Mrs. C. On inquiry I learned she was past the eighth month of gestation; that she was bothered through the night with trifling pains. These she attributed to having taken oil. During the night there was no hæmorrhage. It came on suddenly and alarmingly, just immediately before I was summoned.

I now busied myself for the safety of the patient, and the first thing I did was to make a vaginal examination. This revealed a placenta through an os into which I could insert my index finger. I do not enter here into the various minor details, such as lowering the head, raising the hips, cooling the room, &c.—all these things are implied, if not expressed; but I plugged after the following fashion, which I think an improvement on Schröder:—I first introduced, through a large-sized speculum, a sponge saturated with tannic acid glycerine. I then filled the vagina in the manner recommended by Schröder. Before employing the plug I drew off the urine. After plugging I placed a binder round the patient to compress the presenting part against the plug—this is the chief aim of plugging, and it should never be forgotten. A restorative in the shape of egg-flip was administered, and, the patient having been made comparatively safe, I withdrew.

I saw her again at 10 a.m. and 2 p.m., but nothing transpired at either of these visits to call for special notice.

About 5 p.m. Dr. J. C. Smyth had paid me a casual visit, and just as I was mentioning the case to him, and asking his help, a messenger hurriedly came and reported matters worse. We both hastened down, and found the patient blanched and almost pulseless. Restoratives were given, the old plug was removed, and as labour had set in and the os was dilated to the size of a two-and-sixpenny piece, we resorted only to the temporary expedient of plugging with a sponge. Meanwhile we informed the husband (who was related to a medical gentleman in town) of the critical state of his wife, laying stress not only on the immediate danger, but also on the gloomy prospects, and enjoined him to tell his relative that we would be glad of his co-operation and assistance. Our advice was taken, and the medical friend sought, but, being unable to get away himself, he despatched to our aid Dr. Kevin, in whom we found an efficient substitute.

All the necessaries being arranged for the operation, and Dr. Kevin having confirmed our diagnosis as to the presentation of the placenta, extent of dilatation of the os uteri, and the pelvic deformity, we proceeded to deliver. The operation was performed thus:—Dr. J. C. Smyth gave chloroform, Dr. Kevin steadied the uterus externally, while I thrust my hand through its os (with as little difficulty and resistance, I repeat, as through an elastic ring) into the uterine cavity, and pulled down the right foot. As Dr. Kevin relaxed his grasp of the uterus while I was turning, he now resumed pressure, and facilitated the expulsion of the body of the foetus. All we wanted now was the delivery of the head, which was evidently arrested at the pelvic brim. After a slight pause, during which the child kicked vigorously and the cord pulsated strongly, we made another effort, which was crowned with success. The birth of the child was followed by the immediate expulsion of the placenta, and no hæmorrhage ensued, but as a safeguard we gave a full dose of ergot and firmly encircled the patient with a well-adjusted binder. Both mother and child did well.

In conclusion, I beg to express my obligations to Drs. Kevin and Smyth for the able manner in which they discharged their respective duties, for to their competence and skill I attribute, in a great measure, the success of the operation that I have just endeavoured feebly to depict.

HIMROD'S ASTHMA CURE.

J. S. HEARN says that this consists of equal parts by weight of powdered lobelia, stramonium leaves, nitrate of potash and black tea, well mixed and sifted together.—*St. Louis Courier of Medicine.*

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F.R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, May 17, 1884.

Towns	Population in 1884	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	851,014	798	798	182	171	-	4	81	1	8	16	4	117	29·4	2·4
Belfast, -	216,622	561	394	61	62	-	1	9	8	9	14	8	63	23·6	2·7
Cork, -	80,124	168	145	21	41	-	-	8	-	6	3	1	26	23·6	2·1
Limerick, -	38,562	110	85	10	26	-	-	-	-	1	2	8	15	28·7	3·7
Derry, -	29,162	73	46	6	8	-	1	1	-	1	1	1	9	20·5	2·3
Waterford, -	22,457	53	66	4	18	-	-	6	2	-	4	2	8	38·2	8·1
Galway, -	15,471	46	27	6	13	-	-	-	-	-	-	-	1	22·7	—
Newry, -	14,808	38	23	4	3	-	-	-	-	-	-	-	5	20·2	—

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 38·2 per 1,000 of the population annually in Waterford, 29·4 in Dublin, and 28·7 in Limerick; the lowest rates are 20·2 in Newry, 20·5 in Derry, 22·7 in Galway, and 23·6 in Belfast and Cork. The rate of mortality from seven chief zymotics ranged from 8·1 per 1,000 per annum in Waterford, 3·7 in Limerick, 2·7 in Belfast, 2·4 in Dublin, and 2·3 in Derry to 2·1 in Cork. Neither in Newry nor in Galway was a death registered from any one of the seven zymotics.

The recorded deaths represent a rate per 1,000 of the population annually of 22·0 in twenty-eight large English towns (including London, in which the rate was 21·0), 26·3 in the sixteen chief towns of Ireland, 28·1 in Glasgow, and 22·7 in Edinburgh. If the deaths (numbering 18) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 28·7, while that of the portion of the district included within the municipal boundary appears as 31·8.

Acute febrile zymotics were returned as the cause of death in 84 instances in the Dublin district, compared with 82, 71, and 72 in the three preceding periods of four weeks each, and a ten-years' average of 115·7 in the corresponding period. This group of maladies therefore again showed an increased mortality, although they were by no means as fatal as usual. The 84 deaths included 31 from scarlet fever, 16 from "fever," 8 from whooping-cough, only 4 from diarrhoeal diseases, and 1 from diphtheria. The epidemic of scarlet fever shows a marked recrudescence, as the deaths have risen from 17 in the previous four weeks to 31. Of the 16 deaths referred to "fever," 4 were ascribed to typhus and 10 to enteric fever, while in two instances the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were exactly one-half those registered (32) in the previous period. Sixteen children under five years succumbed to scarlet fever, including not one infant of less than twelve months. All the 8 victims of whooping-cough were under five years of age, and 5 of them were not a year old.

The epidemic of measles has apparently died out in Cork, where no deaths were caused by it, compared with 4, 3, 10, and 20 in the four preceding periods.

Scarlet fever was as fatal as before in Belfast, the deaths being 9, compared with 9, 12, and 14 in the three previous periods. The deaths from this disease also were again 3 in Derry, and fell from 8 to 6 in Waterford. Whooping-cough still shows a widespread prevalence and fatality. Diarrhoeal diseases were credited with 24 deaths in the eight towns, against 32, 24, and 28 in the three previous periods of four weeks each.

In the Dublin Registration District 798 births and 793 deaths were registered, compared with 778 births and 730 deaths in the previous four weeks. The births were those of 424 boys and 374 girls. The deaths of infants under one year rose from 126 to 132; those of persons aged sixty years and upwards fell from 177 to 171.

The deaths referred to pulmonary consumption in the eight towns were 244, compared with 243, 212, 220, 189, 170, and 173 in the six preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 172 deaths, against 155, 126, 157, 161, 185, and 165 in the six preceding periods, and an average of 156·3 in the corresponding four weeks of the previous ten years. The 172 deaths included 98 from bronchitis (average = 101·2) and 41 from pneumonia (average = 32·0). Not fewer than 16 deaths from pneumonia were registered in the third week of the period. These figures again bear testimony to the severity of the spring as contrasted with the extreme mildness of the past winter. Of the 98 persons who succumbed to bronchitis, 10 were infants under twelve months, whereas 36 had passed their sixtieth year.

On Saturday, May 17, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox or of measles, 50 cases of scarlet fever, 42 of typhus, 13 of enteric fever, and 16 of pneumonia.

The mean temperature of the four weeks was 49.7° in Dublin, 47.5° in Belfast, 49.3° at Roche's Point, Co. Cork, 49.5° at Greenwich, 46.2° at Glasgow, and 46.3° at Edinburgh. The beginning of the period was cold, particularly at Greenwich, where the mean temperature of the week ending April 26 was only 40.6° , or 7.6° below the average. The end of the period was mild, the mean temperature of the week ending May 17 ranging from 59.0° —or 6.5° above the average—at Greenwich to 51.8° at Belfast.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, June 14, 1884.

Towns	Population in 1883	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	849,685	801	603	98	123	-	1	23	4	4	14	5	97	22.3	1.9
Belfast, -	214,022	581	345	60	55	-	1	5	1	8	4	13	63	20.7	1.9
Cork, -	80,124	174	173	17	30	-	2	2	-	3	6	2	34	28.1	2.4
Limerick, -	38,562	84	86	14	23	-	-	1	-	-	1	2	9	29.0	1.4
Derry, -	29,162	55	44	6	14	-	-	2	1	3	-	-	4	19.6	2.7
Waterford, -	22,457	53	43	3	8	-	-	1	-	-	6	-	6	24.9	4.1
Galway, -	15,471	26	32	2	17	-	-	-	-	-	-	2	1	26.9	1.7
Newry, -	14,808	24	15	3	5	-	-	-	-	-	-	2	2	13.2	1.8

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 29.0 per 1,000 of the population annually in Limerick, 28.1 in Cork, 26.9 in Galway, 24.9 in Waterford; the lowest rates are 13.2 in Newry, 19.6 in Derry, 20.7 in Belfast, and 22.3 in Dublin. The rate of mortality from seven chief zymotics ranged from 4.1 per 1,000 per annum in Waterford, 2.7 in Derry, 2.4 in Cork, 1.9 in Dublin and Belfast, 1.8 in Newry, and 1.7 in Galway, to 1.4 in Limerick. There is, therefore, a very marked decline in the general mortality and in that due to zymotic diseases.

The recorded deaths represent a rate per 1,000 of the population

annually of 19·8 in twenty-eight large English towns (including London, in which the rate was 18·9), 22·3 in the sixteen chief towns of Ireland, 25·3 in Glasgow, and 21·5 in Edinburgh. If the deaths (numbering 24) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 21·5, while that of the portion of the district included within the municipal boundary appears as 22·5. In London, and particularly in its northern and eastern districts, a serious epidemic of small-pox prevails—the deaths were 155 against 85 and 46 in the two preceding periods respectively.

Acute febrile zymotics were returned as the cause of death in 62 instances in the Dublin district, compared with 84, 82, 71, and 72 in the four preceding periods of four weeks each, and a ten-years' average of 114·9 in the corresponding period. This group of maladies therefore showed a decidedly lessened mortality, while they were by no means as fatal as usual. The 62 deaths included 23 from scarlet fever, 14 from "fever," 4 from whooping-cough, only 5 from diarrhoeal diseases, and no less than 4 from diphtheria. The epidemic of scarlet fever, which showed a marked recrudescence in the preceding period, when the deaths rose from 17 in the previous four weeks to 31, has again decreased. Of the 23 fatal cases, no less than 9 occurred in the Donnybrook (Pembroke Township) District alone. Of the 14 deaths referred to "fever," 4 were ascribed to typhus and 9 to enteric fever, while in one instance the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were 2 less than those registered (16) in the previous period. Sixteen children under five years succumbed to scarlet fever, including not one infant of less than twelve months. All the 4 victims of whooping-cough were under twelve months old.

Measles caused 2 deaths in Cork, compared with 0, 4, 3, 10, and 20 in the five preceding periods.

Scarlet fever was not as fatal as before in Belfast, the deaths being 5, compared with 9, 9, 12, and 14 in the four previous periods. The deaths from this disease also were 2 in Cork and Derry, and fell from 6 to 1 in Waterford. Whooping-cough decreased, except in Derry, where it caused 3 deaths. Diarrhoeal diseases were credited with 26 deaths in the eight towns, against 24, 32, 24, and 28 in the four previous periods of four weeks each.

In the Dublin Registration District 801 births and 603 deaths were registered, compared with 798 births and 793 deaths in the previous four weeks. The births were those of 407 boys and 394 girls. The deaths of infants under one year fell from 132 to 98; those of persons aged sixty years and upwards fell from 171 to 123.

The deaths referred to pulmonary consumption in the eight towns were 216, compared with 244, 243, 212, 220, 189, 170, and 173 in the

seven preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 108 deaths, against 172, 155, 126, 157, 161, 185, and 165 in the seven preceding periods, and an average of 141·7 in the corresponding four weeks of the previous ten years. The 108 deaths included 60 from bronchitis (average = 90) and 36 from pneumonia (average = 30·4). As many as 28 deaths from pneumonia were registered in the first half of the period. Of the 60 persons who succumbed to bronchitis, 10 were infants under twelve months, whereas 12 had passed their sixtieth year.

On Saturday, June 14, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox or of measles, 28 cases of scarlet fever, 22 of typhus, 11 of enteric fever, and 13 of pneumonia.

The mean temperature of the four weeks was 53·8° in Dublin, 51·6° in Belfast, 53·6° at Roche's Point, Co. Cork, and 54·9° at Greenwich. The returns for Edinburgh and Glasgow are incomplete. The beginning and close of the period were warm, particularly in Dublin and at Greenwich. On June 13, the thermometer in the screen rose to 75·4° in Dublin, and 76·6° at Greenwich.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of May, 1884.*

Mean Height of Barometer,	-	-	-	29·940 inches.
Maximal Height of Barometer (on 22nd, at 9 a.m.),				30·383 „
Minimal Height of Barometer (on 3rd, at 3 p.m.),	-			29·196 „
Mean Dry-bulb Temperature,	-	-	-	52·5°.
Mean Wet-bulb Temperature,	-	-	-	48·7°.
Mean Dew-point Temperature,	-	-	-	44·8°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-			·300 inch.
Mean Humidity,	-	-	-	75·4 per cent.
Highest Temperature in Shade (on 11th),	-			69·4°.
Lowest Temperature in Shade (on 6th),	-			37·2°.
Lowest Temperature on Grass (Radiation) (on 6th),	-			33·4°.
Mean Amount of Cloud,	-	-	-	55·3 per cent.
Rainfall (on 16 days),	-	-	-	1·358 inches.
Greatest Daily Rainfall (on 14th),	-	-	-	·263 inch.
General Directions of Wind,	-	-	-	S.W., E.

Remarks.

In most respects this may be considered a favourable month. The mean temperature deduced from the readings of the Dry-bulb thermometer taken at 9 a.m. and 9 p.m. was 52·5°, while that deduced, by Kaemtz's formula, from the maximum and minimum readings was only 50·0°—a value which is nearly one degree (0·8°) below the average mean

temperature calculated in the same way for the 20 years, 1865–84 inclusive. The great excess of the mean of the Dry-bulb readings was caused by the prevalence of very low temperatures at night. The rainfall (1·358 inches) fell short of the average of 20 years (1·938 inches) by nearly six-tenths of an inch. The rainy days (16 in number) were one more than the average—namely, 15·0. There was no snow or sleet, but hail fell on the 3rd and three following days as well as on the 18th and 19th. Distant thunder was heard on the 4th and 19th, and lightning was seen on the night of the 24th. Solar halos appeared on the 12th, 21st, and 23rd. There was a beautiful rainbow after 5 p.m. on the 19th. The sky was much freer from cloud at 9 p.m. (percentage of sky obscured = 43·2) than at 9 a.m. (percentage = 67·3).

The month opened with very unsettled weather, owing to the presence of an extensive and deep atmospherical depression off the N.W. of Scotland, while the barometer stood high over France and the Peninsula. On May Day a fresh westerly gale prevailed, and on the 3rd very heavy showers of hail and rain fell in Dublin, and the wind blew in strong squalls from W. At 8 a.m. of this day the barometer ranged from 28·89 inches, at Stornoway in the Hebrides, to 30·15 inches at Biarritz, and 30·13 inches at Toulon. During the following three days cold N.W. winds and occasional showers of rain and hail, with fair bright intervals, were prevalent, and the nights were particularly sharp. The showers were accompanied in some instances by thunder. The depression which caused this bad weather gradually filled up and dispersed over Norway on Wednesday, the 7th. At this time an anticyclone developed in France, while depressions began to travel towards N.E. along the W. coasts of Ireland and Scotland. Hence strong S.W. winds sprang up, cloud increased, and temperature rose. Near Dublin the rainfall was slight, and the sky was comparatively clear, so that the weather became singularly warm—the thermometer finally rising on Sunday, the 11th, to 69·4°, the maximal reading of the month. In England, however, it was much warmer—the temperature reaching 78° in London and at York, and 79° at Cambridge, Loughborough, and Liverpool.

After the 12th conditions became unsettled, as a new series of depressions, skirting the western shores of Ireland and Scotland, caused fresh and squally S.W. winds, cloudy skies, and showers in most districts. On the morning of the 15th a quarter of an inch of rain fell in Dublin. The 17th was stormy, and after a warm forenoon temperature gave way precipitately—the thermometer falling 18° in a few hours, and this too without rain. On the 18th and 19th electrical showers of rain and hail fell in Leinster.

The weather took up on the 20th, and then came a succession of beautiful summer-like days, with much sunshine and light winds by day, followed by cool, clear nights. In Dublin the relative humidity at 9 a.m.

of the 21st was only 56 per cent. The range of temperature about this time was very large everywhere, and at Newton Reigny, near Penrith, in Cumberland, on the 23rd, the sheltered thermometer, after falling to 38° in the early morning, rose rapidly and reached 85° by 3 20 p.m., giving a range of 47° in about 12 hours. In Dublin scarcely any cloud was observed between the 21st and the 24th. On the evening of the latter day cirrus again came up from S.W., and lightning was seen late at night.

On the 25th and 26th a shallow thunderstorm depression was found off the S.W. of Ireland. It produced dull weather, and in places a genial and welcome rainfall occurred. Towards evening of the 26th the clouds dispersed, and a succession of bright days followed—the warmth of the sun being tempered by cool easterly to north-easterly winds. In Dublin the mornings of the last three days were cloudy, but the sky cleared before midday, and the afternoons were brilliant. In England the easterly wind was stronger, and the weather was consequently bleak and unseasonable. Along the west coast of France heavy rains occurred at this time, being ushered in with thunder and lightning at the mouth of the English Channel on the evening of the 27th.

PERISCOPE.

Edited by G. F. DUFFEY, M.D., F.K.Q.C.P.

MENTHOL.

A WRITER in the *Therapeutic Gazette* says that this drug has never failed to relieve his own headache or any nervous headache in his care. He simply wets his finger with the following mixture, and passes it several times over the forehead:—R. Menthol, 1 drachm; alcohol, 1 ounce; oil of cloves, oil of cinnamon, of each 20 minims. In the pain of chronic rheumatism of elbow and knee joints, it affords prompt relief, and in the writer's own case of sciatica, rubbed down the groin and thigh it acted like a charm.

THE ADMINISTRATION OF ETHER BY THE RECTUM.

M. MOLLIÈRE, Surgeon-in-Chief of the Hôtel Dieu, Lyons, gives an account of some operations for which, at the recommendation of Dr. Yversen, of Copenhagen, he induced anæsthesia, by administering ether by the rectum. Only a small quantity was required, which was given by means of a double tube and Richardson's pulveriser. The results were very satisfactory, and M. Mollière believes that this method is likely to render great services. It suppresses the stage of excitement, and the

dose employed, which is reduced to a small quantity, can be strictly measured, while in operations on the face the apparatus is not in the way of the operator. The inspiration of ether, too, which to some patients is so odious, is avoided. Further trials are required to fully estimate the value of this mode; but, thus far, it may be stated that in order to obtain deep anæsthesia, with a very small quantity of ether, it suffices to introduce a caoutchouc tube into the rectum, and bring this into communication with the ether flask, placed in a recipient containing water at from 40° to 60° C.—*Lyon Médical*, March 30, and *Med. Times*.

SALICYLIC ACID IN THE TREATMENT OF CEREBRO-SPINAL MENINGITIS.

FROM being impressed, during an epidemic of cerebro-spinal meningitis, with the idea that an analogy existed between that disease and acute rheumatism, Dr. Ramsey was led to use salicylic acid in its treatment. During the epidemic mentioned eleven cases of cerebro-spinal meningitis occurred in his practice. Four of them were treated with ergot, potassium bromide, chloral, aconite, quinia sulphate, morphia sulphate, and numerous other remedies; the result was three deaths and one recovery. The seven other cases were treated with salicylic acid, with the result of five recoveries and but two deaths. They were all violent cases, and possessed the distressing characteristics of the disease in full. He says that salicylic acid will control the migratory pains of head, elbow and knee, and reduce the temperature in most, if not all, cases of cerebro-spinal meningitis. And that in every case in which he prescribed it, he perceived great benefit in the condition of the patients from the beginning of its use.—*Western Med. Reporter*, March, 1884.

DIPHTHERIA AND CROUP.

THE following communication has just been made to the Belgian Academy of Medicine by Dr. Delthill:—"Diphtheria is characterised by a fibrinous exudation, or false membrane, which covers the surface (*tapisse*) of the respiratory passages, the trachea, and sometimes even the bronchi. Having remarked that these false membranes melt in a few minutes in contact with the vapours of tar or of spirit of turpentine, the principle was applied to infants in the greatest danger and almost in their death agony. It is sufficient to light near the bed a mixture of turpentine and tar, which fills the chamber with thick, black smoke, so as to completely obscure it. The infant breathes with satisfaction this tar-laden atmosphere, and very soon the false membrane becomes detached, and comes up in buttons of expectoration. If these be placed in a glass the solvent process continues visibly. The throat should now be brushed with a mixture of coal tar and lime water. In no case have infants so treated communicated the disease to their attendants.—*L'Escant*, April 24, 1884.

TREATMENT OF DIPHTHERIA AND CROUP BY LARGE DOSES OF PERCHLORIDE
OF MERCURY.

DR. W. M. THALLON lately brought before the Medical Society of the County of Kings a communication on this subject, which, with the discussion thereon, is reported in the *N. Y. Medical Jour.* of April 12, 1884. It would appear that the method of treatment advocated—viz., by large, frequently-repeated doses of corrosive sublimate—was stumbled upon by accident, and that Professor Pepper subsequently used the remedy with very gratifying results. Dr. Thallon's attention was, however, first drawn to its use from a knowledge of the powerful antiseptic properties of the perchloride, and of the existence of certain specific bacteria in the blood and exudate of diphtheria. The dose prescribed is about the one-fortieth of a grain every third hour. The first point in its administration is that it should be given barely diluted with water and for as short a time as necessary, and the criterion followed is the state of the false membrane. If this is increasing, the drug is increased; if it is stationary, the same dose is maintained; and if the membrane has disappeared, it is stopped. Dr. Thallon's usual formula is:—*R.* Hydrargyri perchlor., gr. $\frac{1}{2}$; vin. pepsin., elixir bismuthi, āā ʒjss. —*M.* Sig. f. ʒj. , as directed, in water. When convalescence has commenced he resorts to the following prescription:—*R.* Hydrargyri perchlor., gr. $\frac{1}{2}$; tinct. ferri chlor., f. ʒiiij. ; glycerin. f. ʒss. ; aquæ ad. f. ʒiiij. —*M.* Sig. f. ʒj. , as directed, in water. He adduced reports of several cases, which would go to show the value of this treatment; and at the subsequent discussion several speakers spoke as to the gratifying results that had, in their experience, followed its adoption.

RESORCIN AND CHINOLINE SALICYLATE IN OTORRHOEA.

CHARLES H. BURNETT, M.D., Phil., has used powdered resorcin, pure or mixed with boric acid, one part to seven of the latter, with great success in chronic purulent otitis media. After cleaning the discharging ear, the powder is blown in, or the mucous cavity may be swabbed with a piece of cotton twisted on a holder and dipped in a pasty solution of resorcin. Chinoline is an energetic bacteria poison; its best-known salts are the tartrate and salicylate; the latter is colourless and amorphous. It is blown into the auditory canal; it is a detergent and disinfectant powder; if the skin is ulcerated, the undiluted powder causes pain; hence a one-in-eight mixture with boric acid was satisfactorily substituted. It is a prompt destroyer of the aspergillus. The mucous membrane becomes blanched under the use of these drugs; the odour of decomposing pus is lessened or removed, and the secretions cease.—*Canadian Tract and Analectic.*

TREATMENT OF CHRONIC BRONCHITIS.

IN those cases of chronic bronchitis in which the small divisions of the bronchi are loaded with a tough, viscid secretion, giving rise to combined dry and moist wheezing râles, D'Armor recommends the combination of small doses of the perchloride of mercury with the chloride of ammonium. He believes that in many such cases the mercurial was a valuable addition to the chloride of ammonium, and tends to limit the peribronchial exudation that so frequently follows these catarrhal states of the mucous membranes.—*N. Y. Med. Jour.*, April 12.

PILOCARPINE FOR DEAFNESS.

FOR all recent cases of deafness due to labyrinthine disturbances, whatever the primary cause may have been, Politzer tries the subcutaneous injection of a two per cent. solution of the hydrochlorate of pilocarpine. He injects four drops at first, and gradually increases the dose to ten drops daily. He gets fairly good results in about one-half of the cases. The reporter has seen three cases of persons totally deaf, who, after being treated in this way, could hear and understand loud speech spoken at the distance of a few inches from the ear; and Politzer has had one case of perfect recovery of the hearing after it had been absent for three years, and several other very satisfactory results following the use of this drug. He is about to publish the results of his experiments with the history of some of the cases. It is not known how pilocarpine acts in these cases, but the benefit derived from its use is certainly great in some of them.—*Berlin Med. and Surg. Journal*, and *Western Med. Reporter*.

METASTATIC IRIDOC-CHORIOIDITIS CAUSED IN TWO CASES BY INFLAMMATION OF THE EAR, AND IN A THIRD BY PUERPERAL FEVER.

DR. CHARLES J. KIPP reports these cases in the April number of the *American Journal of the Medical Sciences*. The first and second of the cases, while not presenting unusual features, so far as either the eye or the ear diseases are concerned, are of value, since there are no cases on record in which this eye disease was caused by inflammation of the ear. The third case derives its interest from the fact that the patient recovered her health—a very uncommon event in cases in which suppurative irido-chorioiditis follows puerperal fever.

SCARLATINA PUERPERALIS.

THE term Scarlatina Puerperalis was originally applied to a form of puerperal fever believed to be modified and intensified by infection with the scarlatinal poison, and which was frequently confounded with an

occasional puerperal affection very closely resembling scarlet fever. Hence two distinct opinions have been advanced:—One that it was a puerperal fever allied to pyæmic or septic conditions to which the scarlatinous poison added virulence, and which would produce in a susceptible person scarlet fever pure and simple. The latter opinion is that it is nothing more than scarlatina attacking a lying-in woman and modified by the puerperal state, but in no manner connected with or caused by pyæmia or septicæmia. Each of these theories is maintained by authors of equal repute at the present time, and some claim the occasional occurrence of both forms of an acute puerperal disease characterised by the scarlatinous eruption and angina. In support of this latter theory, and as a contribution to the study of this rare complication of the puerperium, Dr. S. C. Busey presents an interesting report of a case, the second of the kind which he has seen, in the April number of the *American Journal of the Medical Sciences*.

LUPUS AND ITS RELATION TO TUBERCULOSIS.

THE controversy over the nature of lupus has been enlivened and infused with a new interest since Koch's discovery of the tubercle bacillus. The disease is a comparatively rare one in this country, and therefore its diagnosis from diseases similar to it has frequently not been accurately differentiated. It is still an open question, and at present a much mooted one, whether lupus is not a local tuberculosis. Friedländer, Volkmann, and many other authorities state decidedly that it is, while Virchow, with many others agreeing, thinks that it is not. Both parties argue from microscopical investigation, and arrive at their respective conclusions in an apparently convincing manner. Koch's discovery of the tubercle bacillus is now being used as a factor in the determination of the nature of these two diseases, and in an important paper on this subject in the April number of the *American Journal of the Medical Sciences* Dr. Robert B. Morison gives the results of his investigations in this direction, from which he concludes that the presence of tubercle bacilli in lupus has not been satisfactorily proven.

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Authors of Communications are requested to write the prescriptions in their papers in full, and in English.

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MEETINGS such as those of the great Association under whose auspices we are here assembled have always appeared to me as having their most useful function in presenting opportunities for reviewing the work we have been doing; estimating the value of the results attained; eliminating, so far as may be, the erroneous or defective; and so getting plainly before us certain standpoints from which further advances may be made. I propose, then, in endeavouring to accomplish the duty imposed on me by your Council when they selected me for the high and honourable office of delivering an address on obstetric medicine, to take Puerperal Fever as my subject, and to treat it in accordance with these principles. In selecting this subject I have been influenced not only by its importance—its vital importance—to one and all of us,

but also by the great advances that have recently been made in our knowledge of its pathology, and in some measure perhaps by the feeling that in our enthusiastic pursuit of the new paths that have been opened to us we are in danger of losing the clue that is to lead us out of the labyrinth in which we have so long been wandering. I shall ask you to consider the disease mainly from a clinical point of view, referring to the laboratory experiments of scientists and pathologists to illustrate and explain the facts observed at the bedside, where alone disease can be studied. In doing this I shall not attempt to present any new or original doctrines. My task must be the more humble one of stating, with what clearness I may, the questions at issue, and the facts on which their solution must be founded—endeavouring to arrange and balance the evidence, so that its true value may be more fully apprehended.

Much of the difficulty that has always attended the study of this disease arises from the similarity of the symptoms during life and of the pathological appearances found after death in its various forms. Its dependence on the great act of childbirth, and the peculiar condition of the patient's system at this period, sufficiently account for this similarity. The enlarged and highly organised uterus suddenly emptied of its contents after violent muscular exertion, and becoming a mass of effete material, whose constituent elements have to be absorbed into the blood as a preliminary to their being eliminated from the system; the exposed state of its vessels; the torn and contused tissues; the great current of blood diverted from the course it has so long been pursuing; the altered condition of the fluid itself, and the highly strained nerve-tension—all tend to concentrate the diseased action on one set of organs, and to impress on it this similarity of development. The attempts, consequently, that have from the earliest times been made to differentiate the various forms of the disease, founded on its morbid anatomy and its symptoms, have failed to simplify its study or in any great degree elucidate its nature. A classification founded on the conditions under which the disease arises, and the nature of the exciting cause adopted by some writers, as by Barnes in modern times, has proved more useful and done more to promote accuracy. One founded on this principle will probably best serve the requirements of the present occasion.

A writer of the last century, Kirkland, upbraids his contemporaries with including "a thousand disorders" under the one

head of puerperal fever. It requires but a very elementary knowledge of the subject to see that a large proportion of these disorders arise from traumatic causes. These, then, will constitute the first group I shall ask you to consider, and perhaps not the least important, seeing that so much can be done for their prevention.

TRAUMATIC CASES.

In tedious and difficult labours, more especially in first labours, the soft parts of the mother are liable to be injured at every stage—the cervix may be lacerated, the lips may be caught between the head of the child and the side of the pelvis and contused, the vaginal walls may be compressed till sloughing be induced, so as to lay open the bladder or the rectum, or both; the perinæum may be torn, or some of the blood-vessels may be lacerated, and blood be effused into all the surrounding tissues, giving rise to hæmatocèles, more or less extensive; and yet, formidable as the enumeration seems, we all know that in the great majority of cases the reaction is moderate, the inflammation set up is localised, if the damage done be not excessive it is repaired, and the patient recovers. But if the patient be in an unhealthy condition, or if her surroundings be unwholesome, then a new train of symptoms may arise, not necessarily depending on the extent or gravity of the wounds, but influenced by them. The inflammation, instead of being normal in character, becomes abnormal; it may extend to surrounding parts, and peritonitis or pelvic cellulitis may be set up; or more distant parts may be affected, and the disease will manifest itself in the pleura or the serous membranes of the heart or of the joints; or the blood in the veins may be coagulated, giving rise to thrombi and emboli, and subsequently pyæmia.

We have now to inquire what is the nature of this change. The researches of modern pathologists and scientists have proved that it is due to the introduction of a poison into the system, and that certain vegetable organisms (Bacteria) are essential agents in the production and dissemination of this poison. They are not agreed, however, as to the exact part played by these organisms. Some hold that the most severe injuries may be inflicted without producing inflammation, and that when inflammation takes its origin from a wound, all that the wound does is to play the part of the door of entrance for the real *noxa*—water germ, air germ, or germ which sticks to the surface of the weapon or

missile which inflicts the injury. They assert that in the genesis of every inflammation, however definite may be the relation between the antecedent damage and consequent reaction, this relation is after all merely secondary. The true cause is the introduction into the damaged tissue from the atmosphere of invisible germs. Where there are no germs, there is no possibility of inflammation. Others, as Dr. J. Burdon-Sanderson, to whom we are indebted for most of our exact knowledge on the subject, teach that inflammation is the direct physiological effect of injury, and that the only inflammations to which minute organisms stand in relation, are those which from their proved dependence on previously existing inflammation may properly be termed secondary or infective, and that consequently the organisms in question were in all probability not so much mischief-makers as mischief-spreaders—that is to say, although an inflammation may come into existence without their aid, their presence communicates to it, after it has come into existence, the power of reproducing itself in previously healthy tissues, whether by extension or dissemination. During the ten years which have elapsed since 1872 (when he first taught this), Dr. Sanderson says the question of the intervention of micrococci, which was then strange even to professed pathologists, has become familiar to everyone, and now the tendency exists to believe that germs explain everything; so that whereas formerly one had to vindicate the very existence of such things as parts of pathological processes, it has now become a part of one's business to protest with all needful vehemence against the attribution to them of functions they do not possess.*

In support of his theory he proves a series of propositions on an experimental basis that seem to leave no room for rational doubt. He shows that the introduction into the circulating blood of a relatively large quantity of exudation, which is the most important effect of a considerable local inflammation, does not produce secondary inflammation elsewhere, and is not attended with any serious constitutional disturbance. He further shows that no organisms endowed with inflammation-producing, phlogogenic, particles, exist in the atmosphere or in the ordinary aqueous liquids with which our bodies come into contact.

* *Lumleian Lectures on Inflammation.* Delivered before the Royal College of Physicians. By J. Burdon-Sanderson, M.D., &c. *Brit. Med. Journal*, April 8, 1882. P. 493.

It had been proved by Hiller that bacteria collected from fluids in an advanced state of putrefaction might, when washed and purified, be introduced into the circulating blood without producing any injurious effect, though proved to be as lively and capable of development as ever. Hiller^a even inoculated himself with them. Dr. Wegner^b showed that the subcutaneous tissue of a rabbit may be kept distended for days by frequently renewed injections of unpurified air without producing inflammation, and that the effect was not more serious if the same tissue were ventilated for a number of hours by a continuous current of air, even when that air was derived from a *post mortem* theatre. When water charged with septic bacteria was injected into the peritoneum of a rabbit, in quantity less than two ounces, it produced no effect whatever. When the animal was killed, the fluid had been absorbed and the lymphatics of the diaphragm were full of bacteria, but neither in them nor in the peritoneum were there any signs of inflammation. Similarly it was found, that when a current of the fluid was passed through the peritoneum for many hours, so that the membrane was exposed for a long time to whatever phlogogenic influences the liquid conveyed, no effect whatever was produced. These experiments with watery liquids are even more conclusive than those with air, for we have here to deal with media, in every particle of which we can very readily prove the actual existence of germs in such a state of viability as to only require a suitable soil to insure their development.

Having thus proved that the exudation of a normal inflammation is not infective, and that no organisms endowed with inflammation producing phlogogenic particles exist in the atmosphere or in the ordinary aqueous liquids with which our bodies come into contact, Dr. Sanderson proceeds to show that whenever an inflammation becomes infective it owes that property to a chemical change in the exudation liquid, of which the presence of microzymes is a necessary condition, and that conversely septic organisms, which are infectious, owe their infectiveness to the exudation soil in which they have grown. He refers to experiments he made a dozen years ago, which showed that in rodent animals peritonitis induced by the injection of irritant liquids is always infective, notwithstanding that the irritant (tincture of iodine) was not only free from germs, but destructive of them. This was, he says, under-

^a Brit. Med. Jour., Jan. 5, 1878. P. 2.

^b Brit. Med. Jour., April 15, 1882. P. 527

stood to mean that the first effect of the iodine was the effusion of liquid into the peritoneal cavity; the second, the infection of this liquid by formed ferments which found their way into it, not from the atmosphere or from external media of any kind, but from the alimentary canal. In another experiment, water which had been boiled so as to remove all germs that might have been in it, was, when cool, injected with antiseptic precautions, in so large a quantity that it could not be rapidly absorbed. When thus accumulated in the serous cavity it charged itself, by diffusion, first with the salts, subsequently in increasing proportion with the proteids of the blood, and thus became a most favourable soil for the development of septic organisms, which in their turn acted infectively or phlogogenically on the blood-vessels and living tissues with which they came in contact. A septic peritonitis ensued, which killed the animal by septicæmia in twenty-four or thirty-six hours. It is thus shown that though the seed is indispensable to the coming into existence of the infective process, the question whether that seed becomes morbid or not depends not on the seed itself, but on the soil. Other experiments prove the same thing, and the whole result is to establish that the presence of septic organisms (provided that they have not been bred inside the organism) is not necessarily attended with any danger, but that they become sources of danger at once when they are brought into relation either with devitalised organs or with extravasated serous fluids of any kind, and particularly with inflammatory exudation.

The sum of our knowledge of these organisms seems to be this:—They are found everywhere—in the air, in water, in the soil; in the bodies of the most healthy animals, on the surface where most exposed to the air; in the entrances to the alimentary and air passages; in the stomach and upper portions of the alimentary canal, but not frequently here, for acid secretions kill them; in the lower portions of the canal frequently; possibly also in the tissues of solid organs, as in the pancreas, liver, kidney, muscle, but this is still a disputed question. In the circulating blood of healthy animals they are never found. They enter the system by the absorbents of the mucous membrane of the small intestines, the lacteals, by the pulmonary mucous membrane, by recent wounds, by the uterine surface after delivery. They exist in the animal body without interfering with health. If they meet with a proper soil, such as exudation liquid, or dead tissue, they set up putrefaction, and in the process of putrefaction a poison is pro-

duced which, mingling with the blood, poisons it and gives rise to septicæmia. This poison they carry into the system, but the bacteria themselves are not poisonous.

Thus, then, we must have two factors for the production of the poison—(1) The material capable of putrefaction; and (2) bacteria to effect putrefaction.

Now, how are we to apply this to our subject? It is well known, as Billroth remarks, that in most open wounds, especially in contused wounds, shreds of connective tissue die, and in many spontaneous inflammations the circulation ceases in some parts of the inflamed tissues and they die. Here, then, we have the material from which the poison is to be elaborated, and the inference is plain that the first step to be taken to avoid this form of puerperal fever is to so conduct the labour as to lessen the amount of injury done, to be careful that the membranes be not ruptured too soon, and that the head be not allowed to press so long on the soft parts as to injure them, and above all that no violence be used.

In the second place, to cut off so far as possible the access of bacteria to the injured parts, by cleanliness, by ventilation, by disinfection; but the experiments of Chauveau and of Kocher (of Berne) and of Sanderson, prove that even where all access from without is cut off, organisms will pass from the intestinal canal or other sources to the point where dead or dying tissue exists, and there set up putrefaction and the elaboration of the septic poison, and consequently a third indication remains of equal, if not greater, importance than the others—that is, to remove the products of decomposition as quickly as possible. Cleanliness, the adage says, is next to godliness. Mr. Simon has modified this, and tells us that of all our present removable causes of disease uncleanness is the most deadly; and Burdon-Sanderson tells us that the only scientific definition of filth is that it consists of the products of bacterial evolution. If the septic poison be not introduced too quickly, too frequently, or in too large a quantity, the living blood and tissues will decompose and neutralise it. They are the best colytics. All collections of blood and liquids must be prevented. Liston did this by leaving the wounds after his operations exposed to the air for five or six hours, or covered with lint dipped in water till all oozing had ceased and the surfaces were glazed over, and then brought them into apposition. This was before the days of antiseptic surgery, yet the wounds were not poisoned by atmospheric germs. Lister leaves drainage-tubes in

the wound to carry off the fluids as formed. In obstetric practice we must depend on the natural drainage and on frequent washings by the syringe. Billroth says that in ordinary wounds the secretion poured out within the first forty-eight hours is especially active, and that the stinking products of tissue decomposition are possibly the least noxious. This does not seem to me to hold good of the discharges after delivery, but let it be so or not we must ever bear in mind that uncleanness must be reckoned as the deadliest of our present removable causes of disease.

ORGANIC SUBSTANCES RETAINED IN THE UTERUS.

The next group we have to consider is so closely connected with the former that it will not be necessary to dwell on it at any length. Since the days of Hippocrates it has been known that portions of the placenta, or membranes, or clots, retained within the uterus will cause fever. As in the laboratory, infusions made of fragments of organic matter, animal or vegetable, afford the material on which bacteria may work and elaborate septic poison, so will organic substances retained in the uterus afford the conditions for the formation of septic poison, which, when it gets into the system, will set up fever. Harvey, of whom it has been said that if he had not been a great physiologist, he would have been a great obstetrician, washed out the uterus under these circumstances; but it is to Dr. Braxton Hicks we are indebted for formally recommending the practice. The rapidity with which the fever subsides when this is sufficiently done proves that the fever depends on the absorption of the poison.

PHLEBITIS.

Closely connected with these groups is another set of cases where the disease takes its origin in varicose veins, which inflame, and in which thrombi form, giving rise to emboli and pyæmia with metastatic abscesses. Bacteria make their way into these thrombi, from within the system, and cause them to disintegrate and break into fragments, which, being carried off in the current of the blood, get arrested at certain points and give rise to secondary inflammations and metastatic abscesses.

EPIDEMIC.

The foregoing groups belong to the class Dr. Barnes calls autogenetic. Autogenetic they are so far as the primary factor for their production is concerned, but for their development they

require the presence of organisms to carry on the manufacture of the poison—that is, the active agent in their production. The cases we have next to consider present a different clinical history, and seem to depend on entirely different causes. Those we have been considering occur only after labour, and have their origin in conditions caused by labour. They occur in isolated cases, are not infectious, and do not spread through whole communities. In the cases we have now to consider the disease may manifest itself before labour has set in. It seizes great numbers at the same time; it observes cycles of development and decline, sometimes disappearing altogether for long or short periods; at its onset it proves fatal to almost all who are attacked by it; as it declines it becomes more mild in its character, and many of those attacked recover. In all these respects these cases resemble diseases specific in their nature and dependent for their development on the action of a specific epidemic influence.

The occurrence of fever before labour, which rapidly develops after delivery into puerperal fever of a very fatal character, has been noted and described by many observers. In the following case all the facts seem to be so fully verified as to leave no room for doubt:—A lady, mother of several children, residing in a healthy situation, in a large and well-kept house, when expecting her confinement, had one of her children under the care of Mr. Wheeler for club foot. Not feeling very well she spoke to Mr. Wheeler about herself, and he prescribed a diaphoretic mixture. Next day Mr. Wheeler finding the fever increasing, and knowing that she was in hourly expectation of her confinement, advised her to send for her accoucheur. Dr. Wm. Smyly now saw her, April 14th, 1882. He found her skin dry and hot; her pulse, 120; her temperature, 104° F. The fever continued to increase till the morning of the 15th, when perspiration occurred, and labour set in. The child was born at 1 30 p.m. on the 15th; a healthy child, still living. The fever continued; though the temperature never again reached 103°, the pulse was abnormally and increasingly fast. The lochial discharge became foetid, and the abdomen tympanitic. During the night of the 18th violent diarrhoea set in, with great pain. I saw her the following morning; she had then a very rapid and small pulse; the abdomen was tympanitic; the breasts flaccid; the skin relaxed; and she was gulping up mouthfuls of coffee-ground fluid, and was apparently dying, but rallied a little, and lived till the next day—the sixth

after her confinement. There was no history of exposure to any zymotic disease. Her infant was born alive and healthy, and continued healthy. There was no disease in the house or family. The child under treatment for club foot was wearing a boot, and running about in perfect health. The fever manifested itself before either accoucheur or nurse was in attendance or labour had set in, and ran its fatal course with all the characters of puerperal fever.

Epidemics of puerperal fever have been so frequently and so fully described that it is almost unnecessary to do more than refer to them. But there is one epidemic on record whose whole history can be so clearly traced that it is exceptionally worthy of attention. It occurred in the Rotunda Lying-in Hospital in 1854 and 1855, and has been described by the late Dr. M'Clintock* with all the faithfulness, accuracy, and vividness of detail characteristic of him. Unfortunately time will not admit of my giving more than a brief outline of the history. It was the second epidemic Dr. M'Clintock had witnessed in the hospital—the first being in 1845, when he was Assistant under Dr. Charles Johnson, and this one in 1854–55 when he was himself Master.

The epidemic unequivocally declared itself in the first week of December, 1854, but not unexpectedly, Dr. M'Clintock says, for there had been twelve or fourteen cases of puerperal peritonitis and phlebitis, together with a few isolated cases of scarlatina and typhus, in the house during the preceding nine months.

From the beginning of December to the 14th of February, 182 women were confined. Not half the average, as admissions, except in extreme cases, were stopped in the end of December, and all January.

Of the 182, 38 or 1 in 5 were unequivocally affected, and of the 38, 17 recovered, and 21 died, making the proportion of fatalities 1 in 8 of all admitted—more than tenfold the average of the hospital. In three of these cases the puerperal disease was complicated with scarlatina, of these two died. One woman, who was slowly recovering from scarlatina, which came on soon after delivery, was seized with symptoms of peritonitis on the tenth day, under which she rapidly sank.

“It rarely happens,” Dr. M'Clintock says, “that puerperal fever breaks out in the hospital without its contemporary appearance in private practice; and it never happens, I believe, that it prevails

* Proceedings of the Dublin Obstetrical Society. Dublin Quarterly Journal of Medical Science. Vol. XIX., p. 456.

to any extent outside the hospital without appearing among the patients within its walls. On the late occasion I had reason to know that several deaths had occurred from the disease among women confined at their own homes, and lacking neither comfort nor attention, before it visited the hospital. Nor since then were its ravages confined to the poor inmates of our wards, for many women among even the upper classes of society were carried off under its fatal influence. During the months of December and January no less than twelve of such deaths, in and about Dublin, came to my own knowledge, and I have heard of four or five more in the beginning of last month" (February, 1855).

On the outset of the fever in the hospital it displayed uncommon virulence, and the first seven patients who were attacked fell victims to its malignity.

The progress of the epidemic is shown by the number attacked on different successive days. Thus, on each of the following days—viz., the 1st, 3rd, 4th, 6th, 9th, 10th, 11th, and 12th December, there was one woman seized with the disorder, three on the 13th, and three on the 15th, and on no subsequent days of this month was there more than one, and on many days not one was attacked; but in February two were attacked on the 8th, two on the 9th, and two on the 10th.

With respect to the period after delivery at which the patient was seized, the following are the general results:—2 were attacked in three hours from the completion of labour, 1 in four hours, 1 in twelve, 1 in fourteen, 1 in seventeen, and 1 in twenty-two hours. Each of these seven cases terminated fatally. One was seized in twenty-two hours after delivery, and 1 in twenty-three—the former recovered, and the latter died. Thus we see, of 9 patients in whom the complaint manifested itself on the first day of childbed 8 died; 12 were affected on the second day, 6 of whom died; 10 were attacked on the third day, and of this number the complaint proved fatal to three.

Here, then, is a disease which approaches gradually; which suddenly acquires such force as to increase the mortality of a hospital nearly tenfold; which, at its onset, caused the death of all who were attacked by it; which affected the city at large; which manifested itself sometimes within three hours of the patient's delivery; and which gradually exhausted its violence and ceased. Is not this the history of an epidemic? Does it not remind one of the history of cholera, or of smallpox, epidemics of which are also characterised

by their gradual approach marked by sporadic cases, their furious onslaught, and their gradual subsidence indicated by diminished violence and the increased number of recoveries?

Epidemic diseases vary as to the mode of their commencement. Generally their advent is heralded by the occurrence of isolated cases at varying intervals. It was thus in the epidemic of 1854–55, of which we have been speaking, and in that of 1826, described by Dr. Collins. In the epidemic of 1845, also described by Dr. M'Clintock, there were no indications of its approach. Its invasion was sudden and unexpected. It sometimes disappears abruptly, as in that described by Dr. Collins—"In the year preceding my appointment as Master," he says, "which took place in November, 1826, puerperal fever prevailed in the hospital to an alarming extent. In the succeeding year, 1827, the mortality from this disease was slight. Typhus fever was, during these periods, very prevalent in Dublin, and many cases of it appeared in hospital. In 1828 the attack of puerperal fever was much more severe, proving fatal to 21 women. It continued to increase in violence considerably in the months of January, February, and March, after which it disappeared, and for the four remaining years of my Mastership we did not lose a single patient from this disease." During these four years 10,785 patients were delivered in the hospital, of whom only 58 died, which is nearly in the proportion of 1 in 186, or 0·54 per cent.—the lowest mortality on record in an equal number of a similar class of patients, as Dr. Collins, writing in 1836, remarks, and now, in 1884, the same remark, I believe, holds good. The mortality of lying-in hospitals may be taken as depending on the extent to which puerperal fever prevails. For short periods, when fever is absent, the average is low, but when the observation extends over a longer term the average is equalised. The whole mortality of the Rotunda Hospital, from its opening in 1757 to the close of Dr. Shekleton's Mastership in 1854, nearly 100 years, was at the rate of 1·21 per cent. As we have just seen, during the four years after the epidemic of 1826 it fell to 0·54, but during the whole seven years of Dr. Collins' Mastership it was 0·96. During the seven years of Dr. Evory's Mastership, 1794–1800, it was lower, 0·75; from 1781 to 1786, under Dr. Rock, it was 0·76; and in the Report just published for the year 1883, it was 0·55.

Epidemics of other diseases—smallpox, for example—sometimes subside as completely as did that of puerperal fever in 1826; but they more frequently linger on, the epidemic influence getting less

and less active, till a new wave approaches and overlaps that which was disappearing. This seems to have been the case in the epidemics of 1845 and 1854. The Report of the Hospital, published by Johnston and Sinclair, for the seven years preceding Dr. M'Clintock's Mastership, enables us to trace it. Unfortunately we have no details for 1846; but in 1847, when Dr. Charles Johnson's Mastership terminated and Dr. Shekleton's began, the disease was still prevalent, or probably there had been a recrudescence of the epidemic. During the months of November and December of that year, with which the Report commences, the total mortality was at the rate of 7·02 per cent. In the following year it fell to 1·81, and continued to fall till 1852, when it reached the minimum of 0·56. The new wave now manifested itself. In 1853 the mortality was 0·88; in the beginning of 1854 it was 1·13; and in the latter months of that year the epidemic, as we have already seen, was in full force, and the mortality reached 11·53 per cent.

The following tables, calculated from Johnston and Sinclair's Report, show the total mortality, and the mortality from puerperal fever:—

TABLE I.—*Total Mortality.*

1847 Nov. & Dec.	}	-	17 in	242 deliveries	= 7·02 per cent.,	or 1 in	14·23
1848	-	33	„	1,823	„ = 1·81	„	1 „ 55·2
1849	-	37	„	2,063	„ = 1·79	„	1 „ 55·7
1850	-	17	„	1,982	„ = 0·85	„	1 „ 114·0
1851	-	14	„	2,070	„ = 0·67	„	1 „ 147·8
1852	-	11	„	1,963	„ = 0·56	„	1 „ 178·0
1853	-	17	„	1,926	„ = 0·88	„	1 „ 113·3
1854	-	19	„	1,679	„ = 1·13	„	1 „ 88·3
Total,		165 ^a					

TABLE II.—*Puerperal Fever.*

1847 Nov. & Dec.	}	-	10 cases of puerperal fever,	9 died,	= 90·0 per cent.
1848	-	43	„	23	„ = 53·48 „
1849	-	29	„	19	„ = 65·55 „
1850	-	15	„	2	„ = 13·33 „
1851	-	10	„	5	„ = 50·0 „
1852	-	3	„	2	„ = 66·6 „
1853	-	8	„	5	„ = 62·5 „
1854	-	11	„	10	„ = 90·9 „

^a An error of 2, owing to a misprint in the Report. Total mortality from all causes was only 163 = 1·85 per cent.

In Dr. M'Clintock's report of the epidemic of 1854-55 it appears the hospital was closed in the latter part of December and all January. It is not directly so stated, but it would appear that it was opened again in February, but the disease showed itself among the new set of patients—2 were attacked on the 8th of February, 2 on the 9th, and 2 on the 10th. We had a similar experience in the Coombe Hospital in the early part of 1880. The hospital was completely rebuilt and newly furnished three years before. Fever manifested itself in the early part of the year, and in March the hospital was closed. The whole house was cleaned, the walls and ceilings scraped and whitened, the floors saturated with wax and turpentine, and everything thoroughly cleaned. It was re-opened in April, every alternate bed being left unoccupied; again the fever showed itself, and again the house was closed. The hospital consists of two buildings, about twenty yards apart from one another. The second building is used for gynæcic cases. The patients were transposed—the gynæcic cases were moved to the labour wards, and all new labour cases were taken into the gynæcic wards; but again the fever manifested itself among the labour cases. The other patients (transferred to what was supposed to be an infected house) remained perfectly healthy. The evidence here seems conclusive that the disease was not the result of "Hospitalism."

Another feature of the disease of almost equal importance manifested itself on this occasion, as showing its true nature. As the epidemic subsided, and the patients who were attacked began to recover, they got pelvic cellulitis, and at the same time many cases of the same kind came into the house from among the patients who had been confined at their homes. At first, suppuration and the formation of abscesses was the rule in these cases, but after a little the majority got well by resolution. The epidemic had expended its force.

In many of the recorded epidemics the occurrence of cases of typhus fever and of scarlatina at their beginning is noted, and it might be said that they were epidemics of these diseases and not puerperal fever at all.

The eighty-nine cases recorded by Dr. Braxton Hicks in his paper on *Puerperal Diseases*^a may lead some to adopt this view, but a careful examination of his cases will show that they prove only that scarlatina and other diseases may, and frequently do, occur in the

^a Transactions of the Obstetrical Society of London. Vol. XII.

puerperal state. They occur in a similar manner after surgical operations, and seriously influence the result, but do not prove that puerperal fever is scarlatina, or the converse. If you sow thistles you will grow thistles, and if you sow scarlatina the crop will be scarlatina. One case mentioned by Dr. M'Clintock affords evidence, however, of the clearest character that the disease was not scarlatina:—"A woman recovering from scarlatina, which attacked her soon after delivery, was seized with symptoms of peritonitis (phrase often used by Dr. M'Clintock as synonymous with puerperal fever) on the tenth day, under which she rapidly sank." It must be admitted that it is in the highest degree improbable that if the epidemic disease was scarlatina it would affect a patient in this manner who was only just recovering from the same disease. It is worthy of remark that, though he makes special allusion to the health of the children, and to the absence of trismus and convulsions, which had been of frequent occurrence in the epidemic of 1845, Dr. M'Clintock does not describe a single case of scarlatina as having occurred among the children of the women attacked by puerperal fever. Nor can it be said the patients died too soon to allow of the appearance of the characteristic eruption. The eruption of scarlatina appears on the second day of the fever. None of the patients died within this time; 1 died in 50 hours from the period of invasion, 1 in 60, and 2 in 72. These were the most rapid cases. Four or five days was the average time that patients lived after being seized with a fatal attack of the fever.

The foregoing evidence seems to me to prove irresistibly the existence of a specific epidemic influence. Much more might be adduced to the same effect. Dr. Lusk^a tells us that in the year 1871 the mortality from childbed in New York was 399; in 1872, 503; in 1873, 431; in 1874, 439; and in 1875, 420. The excess in the deaths for 1872, he says, was due wholly to an increase in the cases of metria, those from ordinary accidents remaining nearly the same as in the preceding years. The disease certainly did not extend into the city from the hospitals serving as foci, for the mortality at Bellevue Hospital was scarcely more than half the usual average. There was no especial mortality that year from either diphtheria, erysipelas, or scarlatina, but the aggregate mortality was the largest known in the history of the city.

Dr. Fordyce Barker, in the recent discussion at the New York Academy of Medicine, alluded to the great puerperal mortality of

^a Science and Art of Midwifery. London: H. K. Lewis. 1884.

1873, and attributed it to epidemic influence. In five of the best wards of the city, he said, in which are the residences of a great proportion of those of wealth, and few of the class of dwellings known as tenement houses, with a population of 307,046, there were eighty deaths from puerperal fever, while in the remaining wards of the city, with a population of 605,245, there were but sixty-three deaths—that is, nearly one-third less, in proportion to the population, than in the best parts.

Epidemic disease is defined to be—"A disease prevalent among a people or a community at a special time, and produced by some special cause or causes not naturally or generally present in the affected locality, as distinguished from an endemic disease."^a The facts now mentioned seem to me to prove that there is a large group of puerperal cases that come strictly within this definition, and that the epidemic thus constituted is a specific disease.

SEPTICÆMIC THEORY.

It is taught, however, by many that puerperal fever is nothing else but poisoning with septic matter from the genital organs.^b

This theory seems to me to be defective, inasmuch as it does not embrace the foregoing facts.

As stated by Schroeder, it involves the following propositions:—

1. Puerperal fever is caused by the absorption of septic matter from the genital organs. It is nothing but poisoning with septic matter.

2. The infecting matter is found everywhere where organic compounds decompose. It may be derived from dead bodies, suppurating wounds, disintegrating neoplasms, and especially the secretions of diseased and sometimes also of healthy puerperal women.

3. Fresh wounds are necessary for the absorption of septic matter. Wounds in a state of granulation do not absorb, but if the granulations be absorbed, or the surface of the wound broken, then it becomes an absorbing surface.

4. The septic matter is never absorbed through the intact skin or mucous membrane, through the lungs or intestinal canal.

5. The septic matter may be generated within the patient herself—self or auto-infection; or be introduced from without—external or hetero-infection.

^a New Sydenham Society's Lexicon.

^b A Manual of Midwifery. By Karl Schroeder.

6. Self or auto-infection is most likely to occur when the wounds are fresh—that is, when at the birth of the child there are already decomposed materials, as from a decomposed foetus, gangrene of the soft parts established before delivery, or when new growths, as carcinoma, rapidly undergo decomposition. Retained membranes and placentæ are rarely the cause, for by the time they begin to decompose the wounds have ceased to be in an absorbing condition.

7. Hetero-infection, or infection from without, arises from the direct application of septic matter to recent wounds in the genital organs by means of the sponge or linen used in cleaning the parts, by instruments, or by the examining finger. It takes place most frequently through lacerations in the cervix.

8. It may possibly be caused by septic matter floating in the air, but there are no cogent reasons for such an assumption.

9. The definition shows there is nothing specific in puerperal fever. It is the same state which is frequently observed in surgical wards, and designated as erysipelas, pyæmia, ichoræmia, and septicæmia.

Such is the septicæmic theory as to the nature of puerperal fever. Those who hold it look on the disease as preventable, and assert that its occurrence is due either to ignorance of the precautions necessary to prevent it, or to failure in seeing that such precautions are rigorously carried out. These precautions are of a very elaborate character. They have been very fully set out in a paper read before the New York Academy of Medicine in December last, by Dr. Gaillard Thomas. They are to be put in force in private dwellings of all classes as well as in hospitals. When a confinement is expected the patient's room is to be carefully prepared, all curtains and upholstery to be removed, the ceilings and floors are to be washed with a solution of carbolic acid or bichloride of mercury. The bedstead and mattress are to be sponged with the same solution. The nurses and physician are to take care that all their clothing is free from septic infection. If they have been exposed to the effluvia of septic diseases, such as typhus or erysipelas, their clothing is to be changed and their bodies thoroughly sponged with a saturated solution of boracic acid. As labour sets in the nurse is to wash her hands, remove the dirt from under her nails, and give the patient an antiseptic injection every four hours. The physician is also to wash his hands and attend to his nails; and, after washing, both doctor and nurse are to soak their

hands for several minutes in a solution of bichloride of mercury. Labour being complete, the third stage being carefully attended to, the physician is to examine the vulva of the patient; if the perinæum have been ruptured it is to be closed by suture, if slight lacerations have occurred they are to be dressed with a solution of carbolic acid and persulphate of iron, and painted over with collodion. The patient is to take ergot three times a day for a week, to have the vagina syringed out with an antiseptic lotion every eight hours—twice as often if the labour has been an instrumental or difficult one—and, after each syringing, a pessary of iodoform and cocoa-nut butter is to be introduced into the vagina, the nurse being careful to disinfect her hands before every approach to the genital tract of the woman.

In corroboration of their views, the advocates of the theory appeal to the results which they have obtained by adopting some such mode of preventive treatment as that laid down by Dr. Thomas. But the history of great hospitals, such as that of Dublin or Vienna, shows that puerperal fever will prevail and cause sad mortality at times, and disappear again, and that the conditions governing its movements have not yet been discovered. Dr. Collins' precautions, compared to those recommended by Dr. Thomas, were very simple indeed:—"All the beds in the hospital are composed," he says, "of straw, nor is any one used more than a second time without the cover having been washed and the straw renewed. In every instance where the patient *dies* this is at once done, and, should the most remote symptom of *fever* have been present, every article connected with the bedding is instantly scoured and stoved; the wood-work and floor washed with the chloride of lime solution, and the entire ward whitewashed."

To these precautions, along with strict attention to ventilation, he attributes the complete disappearance of puerperal fever, and the fact that his mortality during the last four years of his mastership was the lowest that had ever been recorded. The gentleman who immediately succeeded Dr. Collins in the mastership was his near relative, his pupil and assistant, and it may be fairly assumed did not relax his attention to the means that had been so successful with his predecessor; yet we find that the mortality during his mastership was nearly double the total mortality of Dr. Collins' mastership, more than three times that of Dr. Collins' four years' exemption from fever, and the highest recorded in the hospital during the first hundred years of its existence.

The experience of the Vienna hospital is not less remarkable :—
 “It is familiarly known,” Dr. Lusk tells us, “that after Semelweiss had introduced the practice among the physicians attending patients at the large lying-in hospital at Vienna of washing the hands in a solution of chloride of lime, there was a great diminution in the mortality which prevailed, notwithstanding which G. Braun reports, however, that in 1857, in the month of July, in 245 deliveries there were 17 deaths. The following month Prof. Klein gave orders to suspend the use of disinfectants. By chance in August there were only 6 deaths out of 250 confinements, and in September of 275 patients none died. From 1857 to 1860 the mortality was slight, though disinfectants were not used ; while during the three following years, in spite of the systematic and persistent employment of those agents, the death-rate once more assumed formidable proportions.”

Such experiences are, no doubt, discouraging. The precautions of the present day are, however, much more elaborate than those of Collins and of Semelweiss ; and, let us differ as to our theories as we may, we will all unite in the earnest desire that they may prove not only still more efficient but more permanent in their effects.

ART. V.—*Remarks on a few Plans of Treatment of Asiatic Cholera, especially with reference to Permanganate of Potassium.**

By F. E. M'FARLAND, Honorary Brigade Surgeon, A.M.D.

THE remarks I have to make on cholera have reference simply to a few plans of treatment I have seen tried, and have practised myself, during a residence of thirteen years in India. My experience compared with many others is very limited, yet, such as it is, it may be of interest to some. I have seen the disease in the epidemic, endemic, and sporadic forms. It is with much diffidence I touch on the subject of treatment. Men of the greatest experience are sceptical about the fact of any one therapeutical treatment being particularly successful more than another. I remember Surgeon-General Joseph Prendergast (whose opinion on most things I would not go beyond) giving me some of his experience of the disease in the Crimea and elsewhere. He told me of cases in which he saw large doses of calomel given, and after death scraped off the stomach unchanged, and of cases that inhaled oxygen gas, expressed themselves quite well, sat up, and then fell

* Read before the Ulster Medical Society, June 17, 1884.

back, and died ; but he would not commit himself to recommend any plan of treatment in particular. Another gentleman, now a retired Surgeon-General in the Indian army, who was second to none in experience of the disease and in skill, told me that whenever he had a case of collapsed cholera that recovered, he asked himself the question, if the case would not have recovered if he had not done anything? When this is the experience of many men who have spent their lives in India, you will understand why I am diffident in recommending any plan of treatment in particular ; and yet to the physician it is of the greatest importance in an outbreak of cholera to have a definite plan in his mind, and to carry it out resolutely. It is most depressing to try a plan of treatment, and, after a couple of hours finding it unsuccessful, change it for another, and perhaps to another to give the patient every chance, and find that after all you are losing time. It is of the greatest importance to have a definite plan in the mind's eye. Now I am not going to touch on the history, ætiology, or even the preventive treatment of cholera—volumes have been written on these heads—nor am I going to take up your time by speaking of the premonitory diarrhoea, if there is any—there are always a number of diarrhoeal cases when there is an epidemic of cholera, and sulphuric acid mixture, chlorodyne, and acetate of lead, and opium, are all good for it ; but the point is the treatment for pure Asiatic cholera, with the main symptoms present : rice-water purging and vomiting, suppression of urine, collapse (less or more), with cramps—in fact, the pure disease—once seen never forgotten, and always recognised. Now there are four principal plans of treatment I have seen adopted and practised myself :—

1. The calomel and opium treatment.
2. The salt treatment.
3. The belladonna treatment.
4. The permanganate of potassium treatment.

In addition to these I shall allude to accessory methods of treatment. There are many men of experience who still believe in calomel and opium, 2 or 3 grains of calomel with half a grain or a grain of opium every two or three hours, with stimulants, but no water, unless mixed with spirits, sinapisms, and hand-rubbing. I cannot say anything in favour of this plan. I have seen many cases recover under it. Some cases will recover in spite of any treatment, as some will die ; but I think the treatment adds much to the agony of the disease, and if it does not hasten the patient

to the grave, does not smooth the passage. I think it may be laid down as a rule that opium should never be given once collapse sets in.

The second is the salt treatment, and there are two ways I was recommended to use it:—One is, common salt, 3ij. ; bicarbonate of sodium, gr. 36 ; chlorate of potassium, gr. 10 ; water, 3 viij. ; to be taken every half hour or hour, according to the symptoms. The other way is, half an ounce of common salt in a pint of water every half hour or hour. Why bicarbonate of sodium is used when the secretions are alkaline I do not know. I should feel inclined to substitute dilute hydrochloric acid ; but certainly I have seen the mixture act very successfully, and more so than the plain salt and water. One would imagine either of these a nauseous draught ; but anyone who has seen the avidity with which a cholera patient will suck down the last drop thinks otherwise. Of the salt I have heard the doubtful recommendation, “that more cases of cholera have recovered with the salt treatment, and more cases have died, than under any other,” and I cannot speak more clearly of it.

The third plan of treatment is that by belladonna. There is some reason in this treatment. Belladonna is a sedative of the sympathetic system, which is the system affected in cholera. The form recommended is $\frac{1}{4}$ grain of extract of belladonna with gr. 2 of sulphate of quinine, in a pill freshly made up, every half hour or hour, till reaction is established. I think I treated three or four cases with belladonna ; one patient by it and no other medicine. He was a captain in my regiment, and had a constitution quite broken down from a three years' residence on the Gold Coast. For three days he suffered terribly, and was in a state either of collapse or of fever. I certainly felt that in belladonna I had the means of bringing him out of collapse, and controlling it ; but when the drug was suspended he became collapsed again. Each time reaction set in it was accompanied by a mulberry-coloured rash and high febrile symptoms, and the difficulty was to prevent the collapse coming on again. I never saw a case in which jactitation was so marked as in this. He was like an exaggerated case of chorea. He made a very good recovery ultimately. The belladonna treatment requires constant watching, is very trying to the physician, but I think is a method of treatment worth knowing of.

The fourth plan of treatment is permanganate of potassium. This is certainly the most successful I have seen. The late

Surgeon-Major W. A. White, R.A., employed it always, and it was from him I learned it. I think he first saw it used in Bulgaria. It has many things to recommend it. In the first place you can carry a small bottle in your waistcoat pocket, sufficient to treat hundreds of cases, and no other medicine is necessary; in the next it is a pleasant remedy. From beginning to end there is nothing in the treatment to cause apprehension to the patients or add to their sufferings. The plan Dr. White adopted was to give a teaspoonful of a palatable solution of the pure salt every ten minutes regularly, by the watch, until reaction was established, and then give beef-tea, &c. I have carefully ascertained that one grain to four ounces of pure or distilled water is the strength of the solution required. The salt must be pure, and the solution must be renewed if it become discoloured, as it sometimes does. Condyl's Fluid will not do. I was much struck the first time I saw it used. I had been treating a soldier patient with the salt solution from early morning till 9 a.m., and he was sinking fast. Dr. White then relieved me while I went to breakfast, and on my return I found my patient with reaction well established. I saw Dr. White treat several cases with the permanganate, and certainly I have never treated a case in any other way since, and I have had several sporadic cases. I treated one case for six hours before any material sign of improvement took place, and after sixty doses reaction became thoroughly established, and the patient made a good recovery. At the same time another man was attacked, and his symptoms were relieved in less than two hours. With the permanganate treatment the patient may drink water freely, or, what I think better still, meal and water, *warm*. The only thing is not to give the drink just on top of the permanganate, but wait three or four minutes, which the patient will willingly consent to do. I have told many of this treatment. Some object on account of the smallness of the dose, which is homœopathic. One medical officer to whom I recommended it gave it in $\frac{1}{4}$ grain doses; and this caused a burning sensation to the patient's throat, and added to his sufferings. The dose I mention is the proper dose; if more than a teaspoonful is given it is rejected, like everything else. The first symptom relieved is the sickness, then the thirst, then heat returns, purging and cramps cease, and after some hours the kidneys act. Cholera is terribly fatal with children. I have seen many carried off by it before I knew of the permanganate treatment, and since then I have never had an opportunity of trying it. I think

in the case of children it would be a most valuable treatment, if anything would; and I do not see why a young child might not get the same dose as I have named for an adult. The dosology is very difficult in the case of children when the old stereotyped methods of treatment are adopted, and it is very difficult to know what to do for a child, and treatment is very unsatisfactory.

I will now speak of accessory treatment; and first of *drinks*:—To withhold water from a cholera patient is, I think, the height of cruelty. Except it be to arrest the sickness of stomach (which it is doubtful if it does), I do not see why ice is so much recommended. The mouth, tongue, and breath are cold, as is the surface of the body, and the temperature, as shown by the thermometer, is much below normal. True, patients will munch any amount of ice, or drink any amount of water, but they will drink salt and water with as much avidity, and I have found they will enjoy warm meal and water just as much. It is fluid they want, to supply the loss of water in the blood, and they will take it in any form. I put a good handful or two of oatmeal in a can of hot water, and let them drink as much as they like of it warm.

Sinapisms are useful sometimes over the heart and epigastrium. Hot bottles to the feet, sides, &c., are of great use.

Handrubbing.—This is often done very roughly. As the patient shouts out to rub hard, the cuticle is soon rubbed off the legs, which are most affected with cramps, and this adds much to the suffering afterwards from contact of the bed-clothes. The proper way is for the assistant to lubricate the hands well with warm oil, and to knead, press, and squeeze the affected parts rather than rub them.

Injections.—I heard of one medical officer who had good success from injecting, per rectum, large quantities of decoction of logwood warm. I have never tried injections, but I would be inclined to try large quantities of a dilute solution of permanganate of potash, warm as the patient could comfortably bear, or large quantities of salt and water, with chlorate of potash, well diluted and warm.

Bleeding.—I saw one remarkable recovery after bleeding. One night, during the height of the epidemic in 1862, at Allahabad, two patients were brought to the hospital, as bad almost as they could be. It was before I saw the permanganate treatment. I tried the salt treatment, gave them champagne, put on sinapisms, &c. They rejected everything given by the mouth. I had heard

of three cases in gaol of natives who had been treated by venesection and recovered. I opened a vein in the arm of the worst case of the two men, but could only squeeze out a few drops of black blood, like tar. I then opened a vein in the other arm with the same result; the man would not bleed. I left him and was attending to the other case, when someone came to me to say the man was bleeding profusely. I bound up his arms pretty quickly; reaction returned; he turned over on his side and went to sleep, and never had an unfavourable symptom afterwards. As he had other treatment, I will not say positively it was the bleeding that saved him, but, humanly speaking, I believe it was. I tried it in two or three cases afterwards, but not sufficiently. I did not give it a fair trial. It was by accident the successful case bled so profusely.

Stimulants.—I believe in the non-stimulant plan of treatment; at the same time, if a patient had a craving for alcoholic stimulants I do not know that I would withhold them; but I have never observed this craving, rather the reverse. If I did give stimulants it would be what the patient was accustomed to. Soldiers, I have noticed, do not appreciate champagne.

These are the few remarks I have to make on the treatment of cholera according to my limited experience, and I give them for what they are worth. There is nothing original in anything I have named; even the meal and water was recommended to me by a Scotch officer not connected with the profession. Without venturing to recommend it confidently, I incline to the permanganate of potassium treatment; and yet I must make an important admission—namely, that I have never seen it tried at the commencement of an epidemic. I have seen it stated that at the commencement of an epidemic nine-tenths die, in the middle one-half, and at the close nine-tenths recover. If this be true, the permanganate can hardly be more unsuccessful than any other treatment at the commencement of an epidemic. I have seen the permanganate used when an epidemic was pretty near its height, and in several sporadic cases since, and I prefer it to any treatment I have yet seen. Neither would I like to let a patient die without trying venesection. A little blood from the arm might relieve embarrassment, caused by the right side of the heart being unduly loaded, and turn the tide in his favour, and if the patient will not bleed there is no harm done.

ART. VI.—*Medical Report of the Fever Hospital and House of Recovery, Cork-street, Dublin, for the Year ending March 31, 1884.* By JOHN WILLIAM MOORE, M.D., M.Ch., Univ. Dubl.; Fellow and Registrar, and lately Vice-President of the King and Queen's College of Physicians in Ireland; Physician to the Hospital, and to the Meath Hospital and County Dublin Infirmary; Lecturer on Practice of Medicine in the Carmichael College of Medicine, Dublin; Diplomate in State Medicine and Ex-Scholar of Trinity College, Dublin.

It once more becomes my duty, as one of the Physicians to the hospital, to record the medical history of the past year. While yet upon its threshold, we lost the efficient and valued services of Dr. George Purcell Atkins, the late Resident Medical Officer and Registrar of the Hospital, who left this country to enter upon a career of usefulness, and we trust prosperity and happiness, in Australia.

Fortunately, Dr. Atkins' successor, Dr. Leslie Maturin, has been able to supply his place with entire success, owing not less to his excellent training as Resident Medical Officer to the Fever Hospital of the South Dublin Union, until lately situated at Kilmainham, than to his energy, zeal, and ability in the practice of his profession. To Dr. Maturin, as a friend and colleague, I desire to express my acknowledgments for the assistance he has afforded me in preparing most of the tables upon which this Report is based.

The Yearly Statement of Patients set forth in Table I. shows that 888 patients were admitted during the twelve months ending March 31, 1884.

TABLE I.—*Yearly Statement of Patients.*

Admitted from May 1, 1804, to March 31, 1884,	-	207,251
Discharged, cured, or relieved,	- - -	191,772
Died,	- - - - -	15,425
	<hr/>	207,197
Remaining in hospital, March 31, 1884,	- - -	54
In hospital, March 31, 1883,	- - -	84
Admitted, 1883-84,	- - - - -	888
	<hr/>	972
Discharged, cured, or relieved,	- - -	800
Died,	- - - - -	118
	<hr/>	918
Remaining in hospital, March 31, 1884,	- - -	54

The admissions for the past five years have been :—

1879–80,	-	-	-	-	-	1,083
1880–81,	-	-	-	-	-	1,250
1881–82,	-	-	-	-	-	471
1882–83,	-	-	-	-	-	562
1883–84,	-	-	-	-	-	888

It will thus be seen that the admissions increased considerably as compared with the two preceding years. This was due to the prevalence of two epidemics—typhus and scarlet fever. Of the former disease, no fewer than 350 cases were admitted; of the latter, as many as 189 cases came under treatment in the wards, so that out of the 888 patients admitted, 539, or 60·7 per cent., suffered from either typhus or scarlet fever.

TABLE II.—*Monthly Statement of Patients from April 1, 1883, to March 31, 1884.*

Months				Admitted	Daily Average No. of Patients in Hospital
April,	1883,	-	-	93	66·96
May,	"	-	-	102	68·00
June,	"	-	-	66	58·96
July,	"	-	-	63	54·29
August,	"	-	-	71	53·74
September,	"	-	-	61	59·83
October,	"	-	-	66	53·45
November,	"	-	-	109	65·03
December,	"	-	-	74	96·80
January,	1884,	-	-	60	72·00
February,	"	-	-	61	62·13
March,	"	-	-	62	54·96
Total and Average, -				888	63·84

In Table II. the total admissions, month by month, and the daily average number of patients under treatment each month are specified. The admissions were most numerous in November (109), May (102), and April (93); least numerous in January (60), September and February (61), and March (62). The very high number of admissions in April and May resulted from the prevalence of typhus in those months—107 of the 195 patients then admitted being returned as typhus cases. The 109 patients in November included 42 cases of typhus and 32 of scarlet fever. During a singularly mild and breezy winter, the admissions fell off

quickly owing to the rapid subsidence of infectious disorders in the city.

The daily average number of patients in hospital ranged from 96·80 in December, and 72·00 in January, to 53·45 in October, and 53·74 in August. For the whole year the daily average was 63·84, contrasted with 32·38 in the previous year, only 28·21 in 1881-82, 84·48 in 1880-81, 69·28 in 1879-80, and 114·67 in 1878-79.

LOCALITIES.

The following is a list of public institutions from which patients were admitted, and of individual houses, which furnished three or more cases :—

Public Institutions.

	Cases.		Cases.
All Hallow's College, Drumcondra,	1	Richmond Prison, -	3
Coombe Ragged Schools. -	1	South Dublin Union Workhouse, -	43
Cork-street Hospital, -	9	Steevens' Hospital, -	1
Elliott Home, -	24	St. Catherine's Schools, -	2
Meath Hospital, -	1	Throat and Ear Hospital, -	1
Night Asylum, Bow-street, -	1	Westmoreland Lock Hospital, -	1
Night Refuge, Cork-street, -	6	Widows' House, Kilmainham, -	1
National Orthopædic Hospital, -	1	William-street Convent, -	1
North Dublin Union Workhouse, -	3		

Individual Houses furnishing three or more Cases.

Cases.	Cases.	Cases.
15 Thomas's-court, - 3	54 Lower Kevin-st., - 3	2 Sterling-street, - 3
15 Cork-street, - 3	15 Bridgefoot-street, - 4	3 Summerhill-terrace, - 3
4 Denzille-lane, - 4	6 Coombe, - 3	Boooterstown, - 3
35 George's-place, - 4	11 Townsend-street - 6	132 Townsend-street, 9
Second Lock, Grand Canal, - 6	6 Watery-lane - 3	16 Francis-street, - 3
11 New-row, South, - 4	4 Orr's-terrace, - 4	4 New-row, South, - 6
8 Peter-street, - 4	7 Chancery-lane, - 3	13 Chancery-lane, - 3
2 Toole's-court, - 3	33 Marrowbone-lane, 4	40 Pimlico, - 5
6 Braithwaite-street, 6	24 Charlemont-street, 3	79 Bride-street, - 3
20 Bishop-street, - 3	8 Malpas-street, - 3	3 Clarendon Market, 3
19 Brabazon-row - 6	7 Luke-street - 5	46 Poolbeg-street, - 4
	10 Mark's-alley, - 11	5 Moss-street, - 3

COMPARATIVE STATEMENT AS TO THE PREVALENCE OF DISEASE.

The number of patients admitted suffering from the chief epidemic diseases, and the mortality of the cases treated to a termination, are included in Table III. During the year, 819 patients were treated who undoubtedly laboured under some form of epidemic disease, 45 patients were admitted and treated, although

their ailments were not so suitable for a fever hospital, and in 24 cases careful examination failed to detect any absolute disease.

In most of the doubtful cases the observation wards were temporarily occupied by the patients, and once more proved to be invaluable as a means of preventing exposure to, and the spread of, infection.

TABLE III.—*Showing the Number of Admissions of the Principal Diseases, and the Number of Deaths among the Cases treated to a Termination, for the year ending March 31, 1884.*

1883-1884	Typhus Fever	Enteric Fever	Simple Fever	Smallpox	Scarlatina	Measles	Pneumonia	Erysipelas	Rheumatism	Varicella	Rotheln	Tonsillitis	Pertussis	Diarrhoea
April, -	53	3	5	—	—	3	13	—	—	—	7	—	—	—
May, -	54	3	9	—	8	6	8	—	1	—	3	2	1	—
June, -	28	4	4	—	5	1	11	—	3	—	1	—	—	—
July, -	23	1	3	—	8	3	7	1	—	1	1	1	1	—
August, -	28	2	12	—	15	3	3	1	—	1	—	—	—	1
September, -	19	4	6	—	23	—	2	1	1	—	—	1	—	—
October, -	13	2	9	—	27	1	5	—	1	1	—	—	—	—
November, -	42	9	10	—	32	—	6	—	1	3	—	1	—	1
December, -	22	5	9	—	26	—	10	1	—	—	—	—	—	—
January, -	20	3	6	—	16	—	7	2	—	—	—	—	—	—
February, -	27	3	6	—	16	—	3	3	—	1	—	2	—	—
March, -	21	7	4	—	13	1	7	2	—	1	—	2	—	—
Total, 1883-84, }	350	46	83	—	189	18	82	11	7	8	12	9	2	2
Total, 1882-83, }	285	53	64	—	15	24	54	13	6	2	—	5	—	—
Increase this year, }	65	—	19	—	174	—	28	—	1	6	12	4	2	2
Decrease this year, }	—	7	—	—	—	6	—	2	—	—	—	—	—	—
Died, -	42	8	—	—	43	1	9	1	1	—	—	—	—	—

An analysis of Table III. exhibits a vast increase in the admissions for scarlet fever, from 15 in the previous year to 189. Typhus rose from 285 to 350, simple fever from 64 to 83, pneumonia from 54 to 82, varicella or chicken pox from 2 to 8, rheumatism from 6 to 7, r6theln, or German measles, was prevalent at the beginning of the hospital year, 12 cases coming under observation—7 in April, 3 in May, and 1 in both June and July. All the 10 cases admitted in April and May came from the Elliott Home.

The epidemic diseases, the admissions from which showed a decrease, were enteric fever, 46 cases against 53 in 1882-83; measles, 18 against 24; erysipelas, 11 against 13.

Happily, as in the previous year, not a single case of smallpox came under observation, although a false alarm arose on more than one occasion outside the hospital in connexion with cases which proved on examination after admission to be merely varicella. Tonsillitis was observed sporadically at the beginning of the hospital year, and towards the close prevailed almost as an epidemic. Two cases of pertussis or whooping-cough came into the wards, and also two cases of autumnal diarrhœa. In April a single case of intermittent fever was under observation. In addition to the foregoing, the following were admitted:—Bronchitis, 13 cases; constipation, 7; alcoholism, 5; tubercular meningitis, 3; renal disease, 2; laryngo-bronchial catarrh, intermittent fever, cephalalgia, phthisis, syphilis, lumbago, paraplegia, uræmia, orchitis, inanition, acute tuberculosis, insanity, dyspepsia, vaccinia, and debility, one case of each.

RATE OF MORTALITY.

In the Hospital Reports for several years back the death-rate has been calculated by comparing the number of deaths which occurred within the hospital year with the yearly number of admissions. As, however, it almost invariably happens that some of the deaths at the beginning of the year occur, not among patients who were admitted after the year had commenced, but among those who had been already under treatment at that time—i.e., on or before the 31st of March, it is evident that the death-rates calculated in the way just mentioned may not be accurate. I have accordingly revised the rates which were published in recent Reports, deducing them from the annual number of deaths compared with the admissions, *plus* the number of patients already in

the wards at the beginning of the year, and *minus* the number of patients remaining in the wards at the close of the year. For example—the number of deaths which occurred in the year ending March 31, 1884, was 118; in the same year 888 patients were admitted, but on the first day of the year (April 1, 1883) 84 persons were already under treatment, and of these 4 subsequently died. It appears then that the 118 deaths occurred, not among the 888 patients admitted within the year, but among those of them whose cases were treated to a termination within the year, and the 84 patients whom the commencing year found in the wards. The death-rate for 1883–84 is therefore obtained by the following proportion:—

$$(888 + 84 - 54) : 100 :: 118 : x =$$

the required death-rate per cent.; that is,

$$918 : 100 :: 118 : 12\cdot85 \text{ per cent.}$$

For the sake of comparison, I append a tabular statement of the corresponding death-rates in former years.

	<i>Percentage Mortality.</i>			
1877–78	-	-	-	- 10·52
1878–79	-	-	-	- 20·22
1879–80	-	-	-	- 17·25
1880–81	-	-	-	- 14·53
1881–82	-	-	-	- 9·82
1882–83	-	-	-	- 9·15
1883–84	-	-	-	- 12·85

The very high rate in 1878–79 (20·22 per cent.) occurred during the last destructive epidemic of smallpox, the fatal influence of which is observable in the two succeeding years also. It will be shown presently that the increased mortality during the past year was due to the prevalence of typhus in the earlier part, and to a severe outbreak of scarlet fever in the latter part, of the period.

Table IV., the saddest of all in this Report, shows that within the year as many as 15 deaths occurred before the deceased had been 48 hours under treatment in the hospital. “Dying on admission” is a grave indictment against those who were responsible for the removal of the unhappy sick to hospital in their last hours. I deeply regret to say that members of the medical profession are sometimes to blame in this matter, and are even ready to defend their conduct when a remonstrance has been made by the hospital authorities.

On July 5, 1882, I drew the attention of the Managing Committee to the circumstances under which the first death which occurred in the hospital within the official year had taken place. On the afternoon of July 1, a married woman, forty years of age, was sent in on the *fifteenth day* of bad petechial typhus, with bed-sores, and in an extremely prostrate condition. She lived for four and a half days after admission. At the time, I expressed the opinion that a patient, of middle age also, so far advanced in typhus of a severe type could not be safely moved to hospital, and should have been treated and nursed at home. The woman was a dispensary patient, and the Board of Guardians might with advantage have made arrangements to provide a nurse for one so deadly sick.

These views were submitted by the Managing Committee of the Hospital to the Dispensary Committee, and by the latter body to the medical officer who had seen the patient. This gentleman wrote in reply as follows:—"I could not at all approve the proposal that fever cases should be retained in their own tenements, and nurses obtained for them at the expense of the rates; the other inhabitants of the tenements being turned out, would be most likely to carry infection into other houses."

This expression of disapproval is based chiefly on the ground that the plan proposed should be carried out "at the expense of the rates." Surely the saving of life outweighs any such consideration, and the expense of providing a home-nurse and maintenance for a woman so grievously ill as was the patient in question, is a fair charge on the rates.

Nor can there be any risk of spreading infection by removing the inhabitants of the house in which such a patient lies sick, if this precautionary measure is effectively carried out. The inhabitants, under such circumstances, should be removed to special lodgings provided by the Board of Guardians, acting as the Sanitary Authority of the Poor-law Union, or by the Public Health Committee of the Corporation, as the case may be. In these lodgings or "refuges," they should remain under surveillance so long as may be necessary to insure that infection shall not be spread.

On August 7, 1883, I again called the attention of the Managing Committee to a very similar case. A married woman, forty-nine years of age, was sent in on the tenth day of severe typhus, during a violent thunderstorm. She died twenty-four hours after admis-

sion. This was Case 5 in Table IV. The Managing Committee very properly made representations to the Dispensary Committee in this instance also, with the view of saving the hospital from the reproach attending the removal of typhus patients in the late stages of the disease. The reply of the medical officer was as unsatisfactory as before.

On February 21, 1884, a woman, aged fifty years, was sent in "most dangerously ill" on the fifteenth day of erysipelas. She lived only twenty hours (Case 14 in Table IV.). Can anything more deplorable be imagined than the want of judgment exhibited in this and other "cases sent in beyond recovery?"

TABLE IV.—*Analysis of Deaths of Cases sent in beyond Recovery, 1883–84.*

No.	No. in Registry	Duration in Hospital	Disease	Note
1	25	48 hours	Typhus	Very bad on admission.
2	196	15 hours	Acute rheumatism	Sent in dying.
3	266	48 hours	Typhus	Dying on admission.
4	317	1 day	Scarlatina	Dying on admission.
5	337	24 hours	Typhus	Sent in very bad
6	403	10 hours	Typhus	Dying on admission.
7	511	2 days	Typhus	Very bad on admission.
8	547	1 day	Scarlatina	Dying on admission.
9	566	36 hours	Scarlatina	Dying on admission.
10	581	10 hours	Scarlatina	Dying on admission.
11	640	10 hours	Scarlatina	Dying on admission.
12	653	20 hours	Typhus	Admitted moribund.
13	715	48 hours	Pneumonia	Very bad on admission.
14	808	20 hours	Erysipelas	Sent in most dangerously ill.
15	885	1 day	Bronchitis	Dying on admission.

CAUSES OF DEATH.

As was already stated above, during the twelve months ending March 31, 1884, 118 deaths occurred in the hospital. Of this number 4 occurred among the 84 patients who remained under treatment on April 1, 1883. Two of these were due to typhus, one was caused by purpura hæmorrhagica, and one by cerebral meningitis. Deducting these 4 deaths, we find that the balance—114 in number—was distributed as follows:—Scarlet fever, 43

deaths; typhus, 42; pneumonia, 9; enteric fever, 8; tubercular meningitis, 3; uræmia and bronchitis, 2 each; measles, acute rheumatism, inanition, acute miliary tuberculosis and heart disease with dropsy, one death each.

In addition to these deaths, we have to add the death of a typhus patient admitted during the year, but who did not die until April 12, 1884.

In Table V. particulars are given as to the 115 deaths which happened among the 888 patients admitted within the year. It is necessary to mention that in this Table the deaths have been referred back to the period of admission of the patients. Thus, the 3 deaths ascribed to typhus in April occurred among the 53 patients suffering from that fever who were admitted during that month.

TABLE V.—*Showing the Deaths and Causes of Death amongst the Patients admitted during each month of the year 1883–84.*

1883–84	Typhus Fever	Enteric Fever	Scarlatina	Pneumonia	Tubercular Meningitis	Bronchitis	Acute Rheumatism	Uræmia	Measles	Inanition	Acute Tuberculosis	Erysipelas	TOTAL
April, -	3	1	—	1	—	—	—	—	—	—	—	—	5
May, -	13	—	—	—	—	—	—	—	—	—	—	—	13
June, -	3	1	—	1	—	—	1	1	—	—	—	—	8
July, -	2	—	1	2	2	—	—	—	—	—	—	—	7
August, -	4	—	1	—	—	—	—	—	1	1	1	—	8
September, -	3	—	8	—	—	—	—	—	—	—	—	—	11
October, -	3	1	10	1	—	—	—	—	—	—	—	—	15
November, -	1	2	11	1	1	1	—	1	—	—	—	—	18
December, -	3	1	5	1	—	—	—	—	—	—	—	—	10
January, -	3	—	2	1	—	1	—	—	—	—	—	—	6
February, -	3	1	3	—	—	—	—	—	—	—	—	1	8
March, -	2	1	2	1	—	—	—	—	—	—	—	—	6
Total, -	43	8	43	9	3	2	1	2	1	1	1	1	115

By far the most fatal diseases during the year were scarlet fever and typhus. To each of these two epidemic diseases 43

deaths were ascribed, so that they together caused 86 deaths out of the 115 deaths which occurred among the 888 patients during the year—that is, 74·8 per cent. of the total mortality.

Enteric fever claimed 8 victims, and pneumonia 9 victims. There were 3 deaths from meningitis (tubercular), 2 from capillary bronchitis or catarrhal pneumonia, 2 from uræmia, and one death from each of the following—acute rheumatism, measles, acute tuberculosis, and erysipelas. A child, aged 15 months, died of “inanition” on August 9.

The largest monthly number of deaths (18) took place among patients admitted in November. Of these 18 deaths 11 were ascribed to scarlet fever. In April there were but 5 deaths, of which 3 were due to typhus. Of the 114 deaths 52 occurred in the first six months (April–September), and 62 in the second six months (October–March). In the former period, typhus caused 28 out of 52 deaths, or 53·8 per cent.; in the latter period, scarlet fever caused 33 out of 62 deaths, or 53·1 per cent. On June 1, 1883, a vanman, aged twenty-eight years, died of acute rheumatism *fifteen hours* after admission. The attack had lasted 17 days. On August 23, an infant, 14 days old, succumbed to an attack of measles. On February 21, 1884, a woman, aged fifty years, died of erysipelas *fifteen hours* after admission, on the fifteenth day of her illness.

[*To be concluded.*]

THE USE OF CRUSHED ICE AND LARD IN THE TREATMENT OF BURNS AND SCALDS.

In the *Asclepiad* for April, 1884, page 164, the treatment of burns and scalds by crushed ice and lard is warmly advocated by Dr. Benjamin W. Richardson. To put the method into practice, ice is well crushed, or scraped as dry as possible; then fresh lard is admixed until a broken paste is formed. The mass is then put into a thin cambric bag, laid upon the burn or scald, and replaced as required. The pain is rapidly eased, and its return is the call for the repetition of the remedy. This mode of treatment is as scientific as it is simple. It saves at once the fever incident to pain, and it leaves very little contraction of surface.—*Lond. Med. Record*, July 15, 1884.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON FEVER.

1. *A Treatise on the Continued Fevers of Great Britain.* By CHARLES MURCHISON, M.D., LL.D., F.R.S. Third Edition. Edited by WILLIAM CAYLEY, M.D., F.R.C.S.; Physician to the Middlesex Hospital and the London Fever Hospital; Lecturer on Medicine to the Middlesex Hospital School of Medicine. London: Longmans, Green & Co. 1884. 8vo., Pp. 731.
2. *Enteric Fever: its Prevalence and Modifications, Ætiology, Pathology, and Treatment, as illustrated by Army Data at Home and Abroad.* By FRANCIS H. WELCH, F.R.C.S., Surgeon-Major, A.M.D. London: H. K. Lewis. 1883. Pp. 190.

1. WE confess that we opened the posthumous edition of Murchison's classical "Treatise on the Continued Fevers of Great Britain" with considerable misgiving. Uppermost in our mind was the thought that the individuality of the book would be impaired, if not lost, in the process of revision, that the editor—as had happened not once or twice before in the history of a standard work—would in his zeal be led to re-write the book in the vain hope of keeping abreast of modern research by so doing; and that the final result would be failure not less lamentable than complete.

Happily our misgivings have proved unfounded, for Dr. Cayley, not possessed by the *kakoëthes scribendi*, has had the good sense and the good taste to limit his editorial duties to the careful reading and correcting of Murchison's text, in which he has, notwithstanding, embodied the more important results of recent researches. This, however, has been done in such a way as not to destroy the continuity of the original text—the interpolated passages being enclosed in brackets and usually printed in smaller type.

Faithfully, then, has Dr. Cayley carried out the principle set before him, and expressed in the opening words of his preface

as follows:—"In preparing for the press a new edition of Dr. Murchison's 'Treatise on Continued Fevers,' the editor has believed that he would best meet the wishes of the medical profession, as well as of Dr. Murchison's representatives, by making as few alterations in it as possible." At the same time, it is but justice to Dr. Cayley to say that the additions he has made are both necessary and valuable. To make room for them he has wisely curtailed the arguments adduced by Murchison in support of points now definitely settled—as, for example, the specific distinction of typhus from enteric and from relapsing fever.

Premising that Dr. Cayley has left the main portion of Murchison's work almost untouched, our duty, as reviewers of the present edition, narrows itself into a record of the chief interpolations and a criticism of any among them which may call for remark. At page 119, Dr. Cayley says, that "judging from analogy with relapsing fever and other contagious diseases, it seems probable that typhus is due to a specific microbe which requires conditions of overcrowding and imperfect ventilation to develop its virulent and contagious properties."

Dr. Cayley appears to have adopted the microphytic theory of zymotic disease. At page 400 he points out that the most important pathological change in relapsing fever is the presence in the blood of actively moving spiral filaments, which were first found by Obermeier in 1873, and called after him by Cohn, "*Spirochæte Obermeieri*" (*σπείρα*, a coil; *χαίτη*, hair). Connected with this question of the specific ætiology of relapsing fever, is that of the duration of the period of incubation. Dr. Cayley says, that when communicated by inoculation of the blood this period varies from 5 to 8 days in man, and from 30 hours to 5 days in monkeys. The former statement is on the authority of Dr. Mottschutkoffsky, of Odessa; the latter is based on experiments made by Dr. Vandyke Carter, whose name will ever be associated with the new designation for the disease—"Spirillum Fever." Again, he observes that "on the whole, in the present state of our knowledge of the nature and ætiology of enteric fever, the most probable view is that it is due to a specific poison consisting of a contagium vivum, possibly a bacillus, though this cannot be considered as proved" (page 499). Subsequently an interesting account of the supposed microbes of enteric fever is contributed by Dr. Heneage Gibbes (page 645), a series of well-executed drawings (Plate VI.) serving to illustrate this difficult subject.

In connexion with the question of the ætiology of enteric fever, Dr. Cayley expresses the opinion—based upon observations made at the Middlesex Hospital—that the period required for the development of the infectious properties of the stools in this fever does not exceed twelve hours, and may be shorter. He holds that the fresh stools are incapable of communicating the disease—a point which may well be regarded as settled, notwithstanding the opinion to the contrary put forward, in 1880, by Dr. Collie, of the Homerton Fever Hospital.

Some interesting observations on Enteric Fever are made by Dr. Cayley. He alludes to the occasional communication of the disease through the agency of diseased meat. Several outbreaks from this cause have been reported from Switzerland, in which country enteric fever with characteristic intestinal lesions is stated, on the authority of Professor Huguenin, of Kloten, near Zurich, to be by no means uncommon among cattle. In order to communicate the disease it is necessary for the meat to be also decomposed.

The discussion which has lately taken place as to the mode of origin of enteric fever in India and other tropical and subtropical climates is referred to at page 488. Granting a general consensus of opinion that the disease may arise *de novo*, two theories are put forward as to the mode of origin—the entogenetic and the ectogenetic. The former theory implies that the disease may be generated in the system, without any infection from outside the body, from the effects of climate, changed modes of life, or even the decomposition of fæces in the intestinal canal. This mode of origin we have ourselves long since recognised, chiefly in relation to retention and decomposition of fæces in the bowels, but we prefer the term “autogenetic,” or perhaps “autochthonous,” to “entogenetic,” as an adjectival prefix to spontaneous enteric fever arising in this way.

Dr. Cayley supplements Murchison's account of the behaviour of the temperature in the disease by a paragraph on apyrexial enteric fever. He writes :—

“Cases or even epidemics of enteric fever have been observed in which the temperature throughout has not risen above the normal point, and has often been subnormal, though the disease has been of a severe type, with well-marked intestinal lesions. This abnormal range of temperature seems to have always been due to the patients having previously been exposed to great hardships and insufficient food.”—(Page 519.)

An epidemic of this kind is described by Dr. Struve as having occurred among the German troops besieging Paris in 1870, and another similar epidemic was recorded by Dr. O. Fräntzel in the *Zeitschrift für klin. Medicin* for 1880.

The occasional association of enteric fever with symptoms of acute rheumatism is alluded to (page 535), and Dr. Cayley quotes a case, reported by Dr. Finlay to the Clinical Society of London, in which the primary attack presented the symptoms of acute rheumatism; a relapse occurred after 14 days with all the characters of enteric fever, and on the 10th day of the new attack perforation caused death. On *post mortem* examination, besides a recent slough some ulcers in the process of healing were found in the ileum, showing that the first attack had been accompanied by ulceration of Peyer's patches. As to the essential nature of this illness, for our part we are content to adopt Murchison's words. He says:—"In several instances I have known the pains in the limbs (in enteric fever) assume a neuralgic character, and prevent sleep; while in others they are articular, and the case at first *simulates* rheumatism."

To Murchison's list of the complications of enteric fever, Dr. Cayley adds "Sudden Death," sometimes during the height of the attack, but much more frequently at the commencement of convalescence, at the end of the third or in the fourth week. Various explanations of this untoward event have been suggested, such as cardiac softening, thrombosis or embolism of the pulmonary artery, "reflex spasm" (Dieulafoy), ischæmia of the brain, pneumatosis of the blood, mental emotion or muscular exertion. Dr. Cayley gives two illustrative cases. In the second of these the patient, a fat, flabby woman of thirty-five, died suddenly on the 23rd day of a mild enteric fever. In the morning she seemed to be going on well, and expressed a wish for food; at 4 50 p.m. she suddenly cried out that she was in great pain, and fell back dead. An incomplete record of the *post mortem* appearances informs us that there was a firm laminated clot in the right ventricle, extending into the pulmonary artery; but the intense pain, expressed by an articulate cry, points to perforation as the proximate cause of death. And this presumption is strengthened on the supposition that her "wish for food"—i.e., solid food, had been gratified.

At page 636, there is a summary of Dr. Hayem's researches on the changes which occur in the heart in enteric fever (*Gaz. Hebdom. de Méd.*, 1874, Nos. 50, 51), and which appear to consist

not only in a granular and fatty infiltration of the muscular fibres, but also in inflammatory changes.

There are only two or three notes by the editor on Typhus. Speaking of the anatomical lesions met with in fatal cases of this fever, Murchison says that the patient usually dies before the body has had time to become much emaciated. Dr. Cayley, however, quotes Dr. Hermann, of the Obuchow Hospital, Petersburg, to prove that a considerable loss of weight takes place during an attack of typhus. That physician found that the average daily loss of weight ranged from $\frac{1}{2}$ lb. to 3 lbs. The greatest total loss was 31 lbs.

Dr. Cayley observes that inequality in the pupils is by no means an infrequent symptom in both typhus and enteric fever. It may occur at any time, and is apparently without prognostic significance. He offers no explanation of the phenomenon.

As regards treatment, the editor does not add much to Murchison's suggestions, except in relation to the antipyretic treatment of fever, and especially of enteric fever, by cold or tepid baths, quinine, kairin, salicin, salicylic acid and the salicylate of sodium, and digitalis. His remarks on this topic extend over some 14 pages of closely-printed type, and are very valuable and instructive. At page 284 he records a case of typhus with early delirium and prostration, in which tepid baths were used with good effect, and the patient recovered.

The following hint on the treatment of tympanites is worth remembering:—

“The application of ice to the surface of the abdomen is, in my opinion, by far the best way of treating great distension. It may be conveniently applied by putting small pieces between two folds of flannel. It is especially indicated in hæmorrhage. By this means a considerable reduction of the general temperature may be effected.”—
(Page 673.)

There is one question upon which we would gladly have had some remarks from Dr. Cayley—namely, the close correlation between enteric fever and that variety of croupous pneumonia to which the term “pythogenic” is now commonly applied. Towards the end of October, 1882, the following remarkable outbreak of disease came under our notice. On the 12th of that month a lad, aged thirteen, was admitted into Cork-street Fever Hospital from 6 Malpas-street, Dublin, suffering from croupous pneumonia.

Malpas-street is very unhealthy—the houses are old and dirty, ill-drained and dilapidated. The street runs down to the bottom of a valley, through which a small tributary of the Poddle river flows sluggishly. The district is a prolific hotbed of disease. On October 31 the boy's father (John C.), a boatman, thirty-six years of age, came in with the same disease. On the 20th of the same month two girls, both aged fourteen, were admitted to the Meath Hospital in enteric fever—one from 11 Malpas-street and the other from No. 13. On November 27, a girl, aged twenty, was admitted to Cork-street Hospital in enteric fever from 7 Malpas-street, next door to the house from which the two cases of pneumonia had come a few weeks previously. On December 12, John C., aged thirty-six, was again admitted to the Meath Hospital from 6 Malpas-street with "renal dropsy." It was he who suffered from pythogenic (?) pneumonia in the previous October, as narrated above. Another coincidence occurred in March, 1883. On the 18th of that month Winifred N., aged nineteen, came into Cork-street Hospital from 6 Malpas-street in an attack of "febricula," and the following day Anthony L., aged twenty-seven, was admitted from the same house with left basic croupous pneumonia.

We have acquired the habit of expressing the relation of the local lesion in pneumonia to the essential disorder in terms of the intestinal lesion in enteric fever to that disease. Just as physicians and pathologists have long avoided the error of Broussais and his school—who held that the pyrexia, or feverishness, in enteric fever was symptomatic of, and secondary to, a local inflammation of the glands of the small intestine—so we shall come in time to avoid the similar but more widely-disseminated error of regarding the pyrexia in pneumonia as symptomatic of, and secondary to, a local inflammation of the lung. The day is seemingly not far distant when we shall speak of "pneumonic fever" in precisely the same way as we use the term "enteric fever" at present—that is, to signify a zymotic, or specific blood-disease, manifesting itself after the lapse of a certain time (the period of incubation) by physical phenomena—objective and subjective—connected in this instance with the lungs.

In concluding this notice of one of the ablest monographs which has ever been written, we desire to express our gratitude to Dr. Cayley for having preserved it in its original simplicity and grandeur.

2. It is unfortunate that our knowledge of diseases does not grow *pari passu* with the multiplication of books upon them. If it did, we should know a great deal about enteric fever. From this work, "a modification" of the Alexander Prize Essay of 1881, we do not learn very much; but there are a few points in it worthy of attention. Thus the question whether the inter-tropical form of the disease differs from the home product is examined (p. 12) and answered affirmatively, and the existence of the "typho-malarial" hybrid is discussed (p. 26); that is, of a disease due not to the supervention of enteric fever upon malarial intoxication, but to the "entrance simultaneously of both exciting agencies in the system." So far as British military experience goes, there is little evidence of the existence of the compound thus defined. "If such occurrences were common in the service they should be most frequently observed in those countries and stations where enteric fever exists and paludal fever predominates, and yet it is not so." The prevalence of enteric fever in the Dublin and other Irish garrisons, traceable, Dr. Welch opines, to insanitary conditions of barracks, &c., is remarkable. In 1872 the Dublin admission-rate, 2·64 per 1,000, was highest of any. In 1874 (1873 having been exceptional, and Dublin only second on the list) our city was again highest, with a rate of 7·34 per 1,000. In 1875 the stations were arranged in districts, and "Ireland" gave the highest admission-rate. In 1878 Dublin (2·44) was beaten by Woolwich (3·67). In 1880 "Ireland" was highest, the Cork district being worst.

As regards ætiology, military experience points to impure drinking-water as the commonest source of infection. Polluted air was the medium in some, but fewer, cases. "There are no recorded instances in which articles of food—milk, meat, ærated [*sic*] waters—furnished the medium, and the instances traced to personal contact with the sick are rare" (p. 39).

We shall conclude our brief notice with mention of some of the conclusions to which Dr. Welch arrives on review of the military records of enteric fever. He rejects transference from a temperate to an inter-tropical climate as a cause. He notes "how limited in scope among the military the disease cause was," 2 per 1,000 being about the average; that the prevalence of the disease bears no relation to the special branch of the service or work of the soldier; that its fatality is very great, "rather more than 1 in 3;" that susceptibility varies inversely as age. On this last subject he remarks—"Early manhood and short service coincide as a rule,

and hence their respective ratios of enteric prevalence coincide, as in the Kinsale outbreak in England [*sic*] in 1875; and with the present composition of our corps and present system of relief the maximum of disease abroad will, as a rule, follow recency of arrival, less from the fact that soldiers are meeting adverse climatic and soil peculiarities for the first time, as that the main mass of them are structurally more impressionable to the enteric cause than later" (p. 117). Season has little influence on the prevalence of enteric fever, or, as Dr. Welch prefers to express it—"The position of season to enteric fever is a subordinate one."

Memoirs of Life and Work. By CHARLES J. B. WILLIAMS, M.D., F.R.S.; Physician Extraordinary to H. M. the Queen; First President, at their formation, of the Pathological Society of London, and the New Sydenham Society; late President of the Royal Medical and Chirurgical Society, &c. London: Smith, Elder & Co. 1884. Pp. 522.

It has been said that scarcely any life is lived the details of which, if truthfully and candidly set down, would fail to be read with interest. It is certain that most biographies and autobiographies, even when the subjects are people of whom the world knew little and cared little, find numerous buyers and readers. The autobiography of an industrious and successful physician is not likely to be an exception to the general rule, and Dr. Williams' *Memoirs*, the present volume of which "is intended for the public as well as for the profession," will, we have no doubt, be favourably received by both of these classes. The author dabbled freely in other streams and pools than those of medicine, and his account of his little plunges and splashes into art and science and manufacture adds considerably to the liveliness of his narrative. It is difficult to imagine an autobiography without egotism—nay, we suspect that egotism is often the great charm rather than, as Dr. Williams calls it, "the great snare of the autobiographer"—and certainly these *Memoirs* are not free from that pleasant vice. Nor (so weak is poor human nature!) does the combative tone of many parts of the book fail to add relish to our perusal. It is evident throughout that the writer says what he thinks because he thinks it, and tells what he has done because he has done it:

"Quo fit ut omnis
Votivâ pateat veluti descripta tabellâ
Vita senis."

He enumerates with manifest gusto, and in full detail, all the lords and ladies who enjoyed the benefit of his professional skill, in a manner which reminds us of Homer's Catalogue of the Ships, not omitting the cantankerous duchess with whom he burnt his fingers (p. 351). His little pietistic outbursts might better, we venture to think, have been relegated to the specially theological chapter which closes the volume; but they are characteristic, and help us to form an accurate conception of the author's personality; some of them, it must be confessed, provoking an unintended smile. In one, for instance (p. 35 *note*), he traces the loss of £12,000 in an unfortunate speculation to his own "delinquency" in having received and adopted the suggestion to invest from a fellow-traveller in a train *on Sunday*, omitting to explain why the other shareholders should have been similarly punished for his fault. In another passage (p. 119) he represents the Almighty as having suspended ordinary physiological laws for his special benefit, in that children did not begin to put in an appearance until after the "considerate delay" of six years after his marriage. "Six years," he explains, "without those blessed encumbrances gave time to my wife to recover health under the trying change from country to town, and left me more free to work at the literature and practice of my profession than I could have been with an early intrusion of little ones." Not less characteristic is Dr. Williams' boldness or simplicity in giving us five pages of his own poetry. During a tour in Switzerland he became so intoxicated with the mountain air that he burst into song. His companions, however, being inappreciative, and not permitting him "to derange the colloquial proprieties by his effusions," he out-poured them upon his unoffending youngest daughter, in a letter, after her return to school. Our readers are entitled to a sample, part of the description of the Grimsel Pass:—

"Nor were the gentle charms of ferns and flowers
Wanting—among the rocks, in varied form :
Straw- and blue-berries too, to Fanny dear.
But as we mount in Ober Hasli Thal
The scene grows desolate ; the stunted fir
Alone survives the withering hurricane
That howls at times athwart that savage glen,
O'er tracts of naked granite, ground and grooved
'By ancient glacier action : ' so 'tis said ;
Yet the same grooves I saw around the sides
Of lofty cliffs, in horizontal lines,
As if from *weather wearing* of the rock.
There, in a vale of rocks, rugged and bare,

Stood Grimsel's Hospice; an unsightly pile,
 Welcome to *strangers*.—*I knew it too well*
 To breathe its tobacco fumes, or feed its fleas!
 So o'er the Grimsel-col we sped our way
 By Todten See—name quite appropriate."—(p. 293).

We should be sorry that either Dr. Williams, or his *Memoirs*, should be judged by his poetry. As a physician he has done a large amount of good and valuable work—more, as this book shows, we think, than he has got full credit for in reputation; and as a scientific man, in more than one department, his success has been far greater than could have been expected of one in deservedly large practice. His observations and researches on many and various subjects have been of great interest and value, and his opinions, not on professional questions alone, are entitled to respect. The extracts and references which we shall make in the following pages will illustrate his versatility and his services to science, general as well as medical.

We shall begin with an amusing account, worthy of Mr. Romanes, of a series of single combats with a game-cock. It is a fair specimen of the author's style, of which he himself does not profess to think highly, and it shows that power of close observation and delicacy of hearing (and perhaps also that love of a good fight), which distinguished him in his professional career, were developed at an early period of his life. He had acquired, he says, in his boyhood an accurate knowledge of the vocal expressions of domestic "birds and animals," and power of imitating them, so that he "could get a sort of mutual understanding with animals, and thereby influence their behaviour." For example:—

"I had a fine game-cock, truly the cock of the walk, and lord of the dung-hill. I used at times to challenge him by crowing, and other notes of defiance; then scraping the ground with my feet and other galline intimations of war were immediately answered on his part, by the drooping of his wings, ruffling of his neck and tail feathers, pecking at the ground, and then flying at me in full fight, *more suo*, with beak and spurs. I commonly received his assaults on my feet and legs, which were sometimes wounded, even through my clothes; but once, when I was stooping down, he attacked my face, inflicting a deep wound with his spur in one cheek, which left its mark for years after. Had it been in my eye, it might have cost me my sight. I did not mind it, for I was delighted with my success in getting him to fight me. In these battles I generally feigned myself conquered after a round or two, running away and imitating the notes of a beaten cock, which are something like those of a hen.

After this, whenever I appeared in the yard, especially if approaching him, or any of his hens, or presuming to crow in his presence, he would fly at me, and drive me away. But sometimes I persevered in the fight until I conquered him, which I was able to do, game as he was, without inflicting on him any pain or injury, but simply by tiring him down. Cocks in their fights often wound each other, sometimes mortally, by a spur penetrating the skull or large blood-vessels; but more commonly their fights end chiefly through the exhaustion of the strength and courage of the weakest. After I had thus tired out my cock, he manifested his submission by running away, with drooping tail, tightened neck-feathers and wings, uttering only a few plaintive hen-like notes. When I appeared in the yard the next day, my vanquished antagonist showed his submission by the same signs of fear and subjection, slinking away from the hens with thin up-stretched neck, tight-packed wings, and drooping tail. After maintaining my supremacy for a few days, I made an attempt to restore his courage and raise him again to his former ascendancy; and, wonderful to say, I completely succeeded, mainly through the poultry dialect which I had learned to utter. I had no plumage to attenuate or tail to droop, but making myself look as small as possible, and simulating the notes of a beaten cock when approaching him, I made a feint to run away, and after a few turns of this kind, my hero began to swell his plumage and deepen his note, and, after the challenge of a crow or two, asserted his supremacy by giving me chase" (p. 8).

Dr. Williams studied in Paris during the Winter Session of 1825-26, and his notices of the great French leaders in medicine and science of that day—Laennec, Broussais, Andral, Louis, Chomel, Thénard, Gay Lussac, Pouillet, Esquirol, and others—will be read with interest. He made sketches of several of these eminent men, which are reproduced in these Memoirs, and which we trust the great originals did not see. The account of Laennec is especially interesting. At the bedside he spoke in Latin "to avoid alarming the patients by the description of their maladies, and also for the benefit of foreigners attending the clinique who might not understand French." He superintended autopsies, fortified with a long forceps and copious chloride of lime, fearful of infection. He was himself phthisical without being aware of it, and died of phthisis in little more than a year. He was one of the prophets who had little honour in his own country. "Those who attended his clinique were chiefly foreigners," and few Frenchmen appeared at his lectures on medicine in the College of France, Broussais being the favourite there. "He exaggerated," says his distinguished pupil, "the superiority of the use of the stethoscope

over immediate auscultation." His own instrument was a "simple cylinder of wood, perforated and hollowed out at the pectoral end, and fitted with a stopper, to be used for certain purposes.' It was Piorry who reduced the stem to its present dimensions, and found the less clumsy stethoscope as efficient as the solid cylinder. In 1828 the results of Laennec's teaching, and Dr. Williams' persevering practice of his methods and study of pulmonary disease, appeared in the publication of the "Rational Exposition of the Physical Signs of Diseases of the Chest."

The sixteenth chapter states, and we think establishes, the author's claim to priority over Dr. Hope in discovering the causes of the normal and morbid sounds of the heart; or, at least, in laying down "the principles of physical diagnosis in valvular disease of the heart, which I claim to have been the first to discover and make known to the profession." In the present volume we have only an outline of the controversy, details being reserved for a later and more technical work. The *Lectures* which appear to establish Dr. Williams' priority were published in 1838, about which date he was devoting his spare time to the improvement of two-wheeled carriages! He disapproved of the recently-introduced hansoms, which he stigmatises as "clumsy, heavy machines, most trying to the horse, especially in going up or down hill, when their lumbering shaft-frames tilt up, or bear down on the poor brute, in the way most calculated to embarrass his movements." His zeal for the improvement of birotal locomotion carried him to the extreme length of taking out a patent, which did not make his fortune.

"There were higher and better objects to claim the attention and the devotion of the whole mind. The patent was therefore turned over to a solicitor to make what he could of it, which proved to be, as in the case of nine-tenths of these patents—nothing. The only practical results of my invention were:—The carriage then built for my own use (which, easy and pleasant as it was for country trips, soon had to be replaced by a brougham for my town-work and increasing practice); and, forty years later, another carriage on the same plan for my retirement; and, although this was defective through having been built of bad materials, yet it has carried me safely, swiftly, and pleasantly along the roads of Cannes during the last six years" (p. 135.)

The twenty-sixth chapter contains an account of Liston's last illness and untimely death, in connexion with which our author showed some of the old spirit which in his early years had led him

into duels with the game-cock—"the boy was father to the man!" Liston was a surgeon, pure and simple, contemptuous of medicine and of physicians. He fed on bread and flesh almost exclusively, with wine and ale for drink. He was addicted to violent exercise, regardless of advice or warning, and he died from the rupture of an aneurysm of the aortic arch. Dr. Williams was absent from London when serious symptoms began to show themselves, and the patient was attended by Drs. Watson and Forbes. When he returned to town he saw Liston, and diagnosticated the existence of a tumour pressing on the trachea. Mr. Cadge, of University College Hospital, supplied a full statement of the case to the *Lancet*, and Dr. Williams wrote to correct some inaccuracies in the report. His letter unquestionably gives the impression that he thought and meant to say that the case might have had a different and more satisfactory termination if it had been under his own care. "After this," he says, "I did not see him professionally, as he placed himself under the care of physicians who, both before and after this period, found no physical signs of disease, and who, therefore, took a more favourable view of the case than I did. The result is known, and I make no further comment on it." Hereupon Dr. Watson wrote a letter of dignified rebuke. Dr. Williams withdrew the objectionable passage we have quoted. Dr. Watson replied amicably, and the matter ended. It is impossible not to see that Dr. Watson had the best of it in this encounter, and that whatever may have been the inaccuracies in Mr. Cadge's report, Dr. Williams' public attack upon eminent physicians in charge of a case which he had seen but once, and that almost casually, was wholly unjustifiable.

We fully agree with Dr. Williams in his view of the monstrous system of election, or rather nomination, of Fellows of the Royal Society. The Council appears to have usurped the power of selecting fifteen persons annually, however numerous or however distinguished may be the candidates. The avowed object of the obnoxious innovation is, not the "improving of natural knowledge," but the "keeping up of the dignity of the Fellowship by diminishing the numbers, keeping it select, and so exalting the honour attached to it." It is well known that the plan works ill; that deserving candidates are kept waiting year after year, while not a few successful ones are suggestive of the "fly in amber." The author's letter to the President of the Royal Society in December, 1874, on this subject is well worthy of perusal. It will be found on p. 448.

We shall conclude by quoting the opinions of this experienced physician and teacher on two or three controverted questions of the day. On the value of lectures, he says:—"Much has been said against teaching by lectures; some declare that they learn better from their own reading than from any *ex cathedrâ* address. My experience is different. In the case of subjects admitting of demonstration, by experiments, or by appeals to the senses, in drawings, black-board illustrations, and such objective aids, it can hardly be disputed that lectures teach better than books. But even in more didactic topics I have always been able to learn more readily from a well-delivered lecture than from reading the same matter in a book. The living words of a clear speaker arrest the attention, and command the thoughts more than the same words read in a book" (p. 12.)

On counter-irritation, on which he contributed a paper to the "Cyclopædia of Practical Medicine," he writes:—"I have no hesitation in declaring that counter-irritation, judiciously employed, ranks amongst the most beneficial means which we possess in the treatment of disease. There has been a fashion of late to decry this mode of practice as *barbarous and irrational*; but the adduced objectors [*sic*] have neither sound pathological knowledge nor clinical experience sufficient to set aside the general verdict of the profession in its favour. When we know, from direct physiological experiment, that we can so act on the tonicity of the arteries of one part as to increase the flow of blood through them, and thus diminish the flow to other neighbouring parts, we gain some insight into the principle of *derivation*, the first factor in the process of counter-irritation. And when further physiological observation teaches us that by a continuance of the same interference we can convert the artificial determination of blood into inflammation, with its changes—vascular infarctus and corpuscular formation and effusion—we gain a further glimpse of the process by which counter-irritation *countervails* a previously existing inflammation. If my space admitted, I could add much more to prove that the practice of counter-irritation is not *irrational*. Neither is it *barbarous* if carefully carried out" (p. 83.)

We thought we had heard the last of the "69 per 1,000 per annum" as the mortality of the British army in India before the days of sanitary reformers and the Army Sanitary Commission, yet here we have to stamp upon the old misrepresentation once again! Dr. Williams (p. 308) quotes from an official report:—

“In a letter, dated March 27, 1870, alluding to the adoption of Sir R. Martin's recommendation [that the European troops in India should be permanently cantoned in hill-stations], Dr. Cunningham states that Dr. Bryden had sent in a table showing the results for working parties in the hills during the past seven years. The result is that the death-rate per annum is only just over 4 per 1,000. That the removal to the hill ranges, everywhere to be found throughout India, should *reduce the death-rate from 69 to 4 per 1,000 is indeed a most patent and wonderful fact. It is the greatest triumph ever achieved over the external causes of disease everywhere prevalent in the plains of Hindostan*” (p. 308.)

We have taken the liberty of italicising this remarkable passage, in which the Army Sanitary Commission and modern sanitarians generally are glorified by a contrast between a death-rate of 4 per 1,000 in men at easy work in the open air in the finest climate in the whole world with 69 per 1,000, the mortality “during fifty-six years of this century.” May we venture to point out that amongst “the external causes of disease everywhere prevalent in the plains of Hindostan” are included the campaigns in Afghanistan (a minor incident of which was the annihilation of an entire British regiment), and in Sindh the two Sikh wars (including the bloody battle of Chilianwallah), and numerous “expeditions” against less important foes?

We hope we shall soon see the second volume of these Memoirs, which, being intended for the profession only, will be even more interesting than the present one. Explanations and definitions, such as that of pneumothorax—“air escaping from a hole into the cavity of the chest”—will be unnecessary, and we shall be able to appreciate better the eminent services which Dr. Williams has rendered to medicine.

A Treatise on Surgery, its Principles and Practice. By T. HOLMES, M.A., Cantab.; Surgeon to St. George's Hospital. Fourth Edition. London: Smith, Elder, & Co. Pp. 995. 1884.

It is now a little over eight years since the work before us appeared in its first edition. That it has now reached the fourth edition proves that it is meritorious. The present volume differs but little from its predecessor, the only changes in it being such “as the constant improvements in the practice of surgery necessitate in every new edition of a text-book.” The author may be congratulated on

having succeeded in keeping the book well up to date; there is scarcely a novel procedure in surgery which is not alluded to, though at times the reference is but scanty. We cannot, however, say so much for what may be called the groundwork of the book. Here we find frequent omissions not only of minor points, but of some of those essential matters which not only every surgeon, but every student, should know. We will take an instance—the author devotes from p. 272 to p. 278 to the subject of “Fractures of the Neck of the Femur,” but it is treated of in the most superficial manner. The various degrees of shortening, and the causes to which the variability is due, are not noticed, except in a remarkable footnote, which runs thus:—“It is said, however, that cases of fracture occur in which the fragments remain at first in their natural contact with each other until displaced by the movements of the patient or some accidental cause. If this is true, such a case might (though only for a short time) be mistaken for a mere contusion.” There is no allusion whatever made to the “cervical ligament” of R. W. Smith, or to its controlling effects in intra-capsular fractures. Perhaps Mr. Holmes never heard of it, otherwise it is hard to understand how he could have omitted all reference to it in his book.

At page 274 we find a sentence which is a good example of the use of speech as described by Talleyrand. Whatever Mr. Holmes' thoughts may have been he has admirably concealed them in the following description of “verifying the displacement” in these fractures by Mr. Morris' method “of measuring the distance of a perpendicular drawn through the outside of the great trochanter on the two sides from the centre of a rod or string stretched across the body just above the pubes.” There is a mathematical error somewhere.

We may give another instance of the paucity of information vouchsafed. At page 616, when discussing the methods of removing the tongue, he says:—“When the whole or the greater part of the tongue is to be removed, it becomes necessary, by some preliminary operation, to obtain access to the root of the organ, and this is done in one of three ways.” What are the three ways? Mr. Holmes gives—first, a small incision close inside the lower jaw from the mouth to the skin, through which the chain of the *écraseur* can be passed. Secondly, Sir J. Paget's plan of dividing the sublingual attachments; and thirdly, “the method which gives the freest access to the root of the tongue,” division of the

symphysis. This latter method is not accredited to its author. Regnoli's name is not mentioned, nor his operation described. Nunneley and the supra-hyoid puncture are forgotten, and only a passing allusion, as if unworthy of mention, is given to the simple expedient of dividing the cheek.

Again, we would call attention to a statement in the next page (618):—"It is curious that even after the removal of the whole tongue, as close as possible to its root, the patient is not deprived of the power of speech, *though the voice is reduced to a hoarse whisper*." This latter statement is certainly curious, and is not in accordance with our experience; nor is it easy to understand how excision of the tongue could exert such a remarkable influence on the powers of the vocal cords.

We could easily multiply instances in which the author has failed to keep the book up to the standard of "A Treatise on Surgery." As we have already said his references to recent literature are, perhaps, the most praiseworthy parts. We must also commend the style in which the book is brought out, which reflects great credit on the publishers. The type is clear and good, the paper very fair, and the binding is such as to earn for the volume a place in our libraries.

A Practical Introduction to Medical Electricity. By A. DE WATTEVILLE, M.D., B.Sc. Second Edition. London: H. K. Lewis. 1884. Pp. 208.

THIS book marks, we think, an important advance in the method of teaching electro-therapeutics. Dr. de Watteville does not write for those who are too lazy or too indifferent to even attempt to master the foundations of this subject. He does not condescend to write a semi-popular book as a guide to the mere routine use of electricity, embellished with narrations of wonderful cures—"self-administered testimonials—so dear to the specialist," but strives to base his teaching upon the sister sciences of physics and physiology.

The first edition was disposed of in a comparatively short time, and we have now before us, as the result of the author's ripened experience, a new work rather than the second edition of an old one. In the former edition the chapter on "Electro-Therapeutics" was simply a translation from Dr. Onimus' *Guide Pratique*, but Dr. de Watteville has, wisely in our judgment, re-written this

whole chapter. While admitting that the therapeutical value of electricity must be determined mainly by the empirical results of clinical experience, he has endeavoured to keep close to a scientific method in the study of the modes of application of electricity to the cure of morbid conditions.

We heartily concur with the author in his views as to the importance of *measurements of current-strength* as an essential condition of a rational application of electricity to medicine, and we note with satisfaction that the proposition which he first made in 1878 of adopting the milliampere (milliweber) as the electrotherapeutical unit has received the sanction of a Committee of the International Congress of Electricians. The *ampere* is the unit of current strength, and represents the strength (*i.e.*, capacity for work) of a current furnished by an E. M. F. of one *volt* (= one Daniell's cell, nearly) through a resistance of one *ohm* (= a column of mercury 1 sq. mm. in area and 1.05 metre in length). The milliampere is a convenient working unit for medical practice, just as the millimetre is for small linear measurements. A current of one milliampere is that given by 3 Daniell's cells, with electrodes of moderate size, through the average resistance of the human body.

The most original and useful chapter in the book is that on "Electro-Physiology." Here we have, in small compass, a fair account of a subject of inherent complexity and difficulty. We wish to draw special attention to the novel plan whereby the results of observations made upon man are embodied in the shape of twenty-seven comparatively simple and well-devised experimental exercises. The repetition of these experiments will teach a student more about the physiology of nerve and muscle than he would be likely to learn from half a dozen courses of lectures, and will enable him to acquire a complete mastery over the manipulations necessary for the practice of diagnosis and treatment by the aid of electricity.

The important subject of electro-diagnosis is worthily handled, and the author rightly insists upon the difficulties of this procedure and upon the need for caution and experience. In a forcible way he shows the absurdity of the popular theory that the carrying out of an electrical investigation requires no special training, and is within the reach of anyone possessing a battery and a superficial knowledge of the influence of electricity upon the human body. The truth is that the thorough and accurate explo-

ration of a man's electrical reactions is a physiological experiment of a very delicate and complex nature, widely different indeed from what commonly passes under the name of an electrical examination. A statement of results, obtained without observing the necessary conditions, even when expressed on oath in a court of law, is devoid of the least weight, and, as experience has shown, is more likely to be wrong than otherwise. It is less than an opinion, it is a mere guess. But can it be said yet that physicians and surgeons are ready to admit this incontrovertible truth?

We have left ourselves space only to mention the excellent and clear plates of the motor points and the tables of neuro-muscular supply, which conclude a book that can be thoroughly recommended as a scientific and practical guide to the use of an agent which no practitioner can afford to ignore.

Injuries and Diseases of the Jaws. The Jacksonian Prize Essay of the Royal College of Surgeons of England, 1867. By CHRISTOPHER HEATH, F.R.C.S. Third Edition. London: J. & A. Churchill. 1884. 8vo. Pp. 480.

It is sixteen years since Mr. Heath's work on "Injuries and Diseases of the Jaws" first appeared. It is now so well known and universally read that we feel sure a hearty welcome will await the third edition, embodying as it does the riper experience of its author.

In the chapter on the treatment of fractured jaws we notice diagrams of Hammond's wire splint, with the following directions for use:—"After bringing the broken parts into apposition, tie them temporarily together with silk passed outside the second tooth on each side of the line of fracture. With a suitable 'tray' and very soft wax, take an impression of the mouth (which need not be deeper than the teeth), supporting the chin while doing so with the left hand. Make a model of this in plaster-of-Paris in the usual way. If there has been any displacement of the parts, saw down between the teeth corresponding to the fracture, adjust the several pieces to the proper 'bite,' and fix in position. Now take a length of iron wire (stout hair-pin size), and carefully make a frame to fit round the teeth, soldering the ends together with silver solder. Cut several five-inch lengths of fine soft iron binding wire, both ends of which should be cut to points, which will greatly facilitate the passing of them through the tartar

between the teeth. Should there be much tartar a fine 'broach' may be necessary." These directions for getting a correct model of the fractured jaw (which, as Mr. Heath tells us, were supplied by Mr. Hammond, the inventor of the splint) will be found very useful, no matter what apparatus may be decided upon, for keeping the parts in apposition. However, we can testify to the excellence of this splint, having seen it used in a bad case of (externally) compound fracture, at Guy's Hospital. The method of applying this splint is fully described, and will readily be understood by reference to the diagram.

In the chapter treating of inflammation, abscess, and periostitis, Mr. Heath draws attention to the importance of the early recognition and treatment of inflammation in connexion with the roots of teeth :—"Inflammation of the periosteum leading to necrosis, and inflammation in connexion with carious teeth leading to abscess, appear to be common to both jaws, but there is a form of inflammation to which the lower jaw is subject which requires notice. The inferior maxilla differs from the superior in consisting of two plates of compact tissue (of which the outer is the thinner), separated by cancellous bone, through which runs a canal for the passage of the inferior dental nerve and vessels, each of which gives an offset to each dental fang. When from the irritation of unsound teeth inflammation is excited, it rapidly spreads up the jaw, leading in a few hours to an amount of effusion into the cancellous structure, which distends it and forces out the external plate of the bone. This effusion, as I have had the opportunity of observing in my own person, is at first of discoloured serum, which by pressure on the jaw can be made to exude by the side of or through the hollow tooth which was the original cause of the mischief. If the source of irritation be allowed to remain, plastic effusion now takes place, leading to the formation of a distinct tumour, usually in the neighbourhood of the offending tooth. This is slowly absorbed on the early removal of the tooth; but, if the irritation be allowed to continue, the effusion will become organised into fibrous tissue, and a very serious affection may thus be produced. From an attentive examination of numerous examples of fibrous tumour of the lower jaw, both before and after removal, I feel sure that the majority originate in the manner here described."

We are sorry to observe that Mr. Heath sanctions and recommends the following treatment for alveolar abscess :—"In the

early stage, if the affected tooth has been recently stopped, and more particularly if the nerve pulp has been destroyed with arsenic, the stopping should be immediately removed, or a hole drilled into the pulp-cavity through the side of the tooth, so as to give exit to any accumulated fluid (see paper on ‘Rhizodontresis,’ by Mr. Hulme, in *British Journal of Dental Science*, April, 1865).” By such a method of treatment the patient is left with a chronic filthy discharge into his mouth, from which he is rarely free till the tooth is removed. A better method would be to remove the filling, syringe out the root with an antiseptic lotion till all discharge had ceased, then fill the root and crown of the tooth; or to replant the tooth.

In the same chapter the author attacks a popular fallacy in a manner we are delighted to observe:—“There is a popular notion, which has received some support at the hands of certain members of the profession, that extraction of a tooth must not be performed during the stage of active inflammation of the alveolus. I know of no foundation for this statement, which is entirely devoid of truth, and yet it has formed the ground for an action against an eminent member of the dental profession.” Mr. Heath further quotes Mr. Cattlin, F.R.C.S., on this question:—“It was the erring practice of some to wait until the inflammation subsided; but if the tooth be retained, the swelling, as a rule, rapidly extends to adjoining parts, and sometimes causes necrosis, occasionally infiltration into muscles, restricting the movements of the jaw, and often ending in abscess, which, bursting externally, permanently disfigures the face.”

Mr. Heath, in the chapters on tumours of the jaws, has modified the opinions he held in previous editions as to the classification and treatment of these tumours. The author, in his preface, tells us, in so doing, he has had the assistance of Mr. Frederick Eve and Mr. Rushton Parker. In treating of multilocular cystic tumours (the name he adopts instead of cystic sarcoma), Mr. Heath says:—“During the last few years very considerable light has been thrown upon the clinical history and pathology of certain cystic tumours of the jaws, both by cases occurring in my own practice, and by the careful microscopic investigation of these and others by Mr. Frederick Eve. . . . Mr. Eve believes that so far from multilocular cysts having a dental origin, they are produced by an ingrowth of the epithelium of the gum. They have frequently followed some form of injury, irritation by decayed teeth, or long-

continued inflammation, which has induced an increased supply of blood to the parts. The multilocular cystic tumours are slow of growth; they have very little tendency to implicate surrounding parts, or the neighbouring lymphatic glands, and, if completely removed, rarely recur, and still more rarely become disseminated through the system. Their comparative innocence is probably explained by the bony capsule forming their boundary, by their low degree of vascularity, and by the remarkable tendency of the epithelial cells composing them to undergo degenerative changes."

In the treatment of a number of these cases Mr. Heath has followed the method advocated by Mr. Butcher—viz., operating through the mouth, and dividing the mucous membrane over the cyst freely; then, with gouge and bone-forceps, removing the expanded external plate of the bone, with the contents and lining membrane of the cyst. In this operation the teeth are interfered with as little as possible, and appear to remain firm. Mr. Heath adds:—"I should in future be guided by the age of the patient, and the amount of solid material found in the cysts. In young persons, with cysts having fluid contents and little growth in the bone, I should be still inclined to adopt palliative measures, and to gouge very freely, carefully watching the case with a view to a more radical proceeding should further development take place. In cases of much solid deposit in connexion with multilocular cysts, and still more in cases of solid tumour with one or more large cysts, there should, I think, be no doubt as to the removal of one half or more of the lower jaw, or any portion of the upper jaw involved."

An important increase to this edition is a chapter on the diseases of the temporo-maxillary articulation. This chapter contains many excellent illustrations of museum specimens, with accounts of several interesting cases occurring in the author's own practice.

A Few Words upon Anæsthetics. By R. T. FREEMAN, L.R.C.P., M.R.C.S. Eng.; L.M. Lond. London: J. & A. Churchill. 1883. Pp. 47.

THIS useful booklet is the forerunner of an "exhaustive" treatment of the subject in a work which Mr. Freeman is preparing. It begins with an interesting account of pre-scientific anæsthetics—Homer's nepenthe, poppy, mandragora, hashish, lithos Memphites ("a kind of marble or some other form of calcium carbonate, which by the action of . . . acetic acid . . . would give

off carbonic acid gas, which, as has been proved in our own times by Thibaud, Follin, and others, is a strong local anæsthetic”), and compression of the veins of the neck. A paragraph on “Anæsthetics in the Middle Ages” helps us to understand the endurance of horrible tortures, such as those to which Beatrice Cenci was subjected, by the victims of mediæval cruelty, although partial explanation of the phenomenon is found in the unquestionably inferior sensitiveness of our ancestors. “Various preparations of mandragora,” says Mr. Freeman, “and other plants appear certainly to have been used for anæsthetic purposes during the middle ages, but in a very unscientific and desultory manner. Prisoners condemned to the rack and thumbscrew could, by bribery or interest, easily procure from their jailers a potion that would render them nearly insensible to torture” (p. 7).

Passing over mesmerism and hypnotism as anæsthetics with contempt which they do not merit, and which savours of ignorance, our author examines in detail the four anæsthetics in ordinary use:—Nitrous oxide, ether, chloroform, and methylene bichloride. For “short narcoses” the first is unquestionably the best. “Of all anæsthetics hitherto introduced, the simplest, and above all the safest, is nitrous oxide. . . . Only two deaths have occurred from its use, and in both of these there had been previous cardiac affections of a serious character” (p. 13). Ether is described as safer than chloroform—of this there is little doubt—and much more powerful than nitrous oxide. It is the least agreeable to inhale; but this objection can be evaded by beginning the anæsthesia with the gas. The same artifice is applicable in the case of bichloride of methylene, which, according to Mr. Freeman, “appears to combine the anæsthetic powers of ether and chloroform without their danger.” Pages 25–47 are taken up with descriptions of apparatus for the administration of anæsthetics.

Researches on the Pulse-wave: an Experimental Inquiry into the Causes of the Variations of Pulse-wave Velocity and Duration of the Cardio-aortic or Presphygmic Interval observed in Man, &c.
By A. T. KEYT, M.D. Chicago. 1883. Pp. 28.

THIS paper, reprinted from the *Journal of the American Medical Association*, is divided into three chapters. In the first the author studies, by means of an artificial-circulation schema provided with registering apparatus, the circumstances which influence the

rapidity of propagation of wave-motion in fluid contained in tubes. The following are the conclusions at which he arrives:—

“1. The velocity of liquid waves along the interior of elastic tubes is proportional directly to the stiffness, inversely to the elasticity of the tube traversed.

“2. It is not sensibly modified by the mode of impulsion, a quick wave and a slow wave being transmitted along the same tube in equal times.

“3. It is proportional inversely to the largeness of the tube.

“4. It is not sensibly modified by different distances from the pump.

“5. It increases with increase of pressure of the liquid in very soft, yielding tubes, but in all other elastic tubes it shows no modification.

“6. It is not modified by rapidity of current through the tube.

“7. It is not modified by branches connected with the main tube.

“8. It is not modified by liquids of different consistence.

“9. The distal wave is notably delayed by obstruction of the tube, although its velocity of propagation is not appreciably diminished thereby.

“10. The distal wave is delayed by communication with an elastic pouch, more easily distensible than the tube, while, if the pouch and tube are nearly equally yielding, there is no increased delay; yet the velocity of the distal wave is not perceptibly diminished from this cause. Hence,

“11. The increased delay of the distal wave in arterial obstruction and distensible pouch arises from arrest at the site of obstruction and site of the yielding pouch.”

The second chapter is headed, “Facts and New Experiments in illustration of the Variations of the Pulse-wave Velocity in Man, and bearing upon the Elucidation of the Causes which produce them.” The conclusions arrived at are summed up as follow:—

“1. The velocity of the pulse-wave is determined above all by inherent states of arterial elasticity, becoming slow as the arteries are more elastic.

“2. It is incessantly changing, within small limits, in consequence of variations of arterial tone, being faster as the tone is higher.

“3. It diminishes with the size of the artery traversed.

“4. It tends to increase with increase of arterial pressure, but modification from variation of pressure often fails to manifest.

“5. It is not perceptibly modified below the site of an arterial obstruction, but the distal wave is delayed there in consequence of check at the site of obstruction.

“6. It is not perceptibly modified in an artery below the site of an aneurysm, although the distal wave may be delayed there in consequence of absorption by the yielding aneurysmal walls.”

The third chapter is on "The Causes of the Variations of the Cardio-aortic or 'Presphygmic' Interval." By this is meant the interval between the commencement of the ventricular systole and the opening of the aortic valves, or the beginning of the pulse in the aorta. It was found:—

"1. The duration of the presphygmic interval is *increased* in slow ventricular contraction; infrequent pulsations; relatively high arterial pressure; heavy aortic valves; mitral insufficiency; and probably mitral contraction.

"2. The duration of the presphygmic interval is *diminished* in quick ventricular contraction; frequent pulsations; relatively low arterial pressure, and aortic insufficiency."

The paper is profusely illustrated by curves. It forms a valuable contribution to the literature of the physiology of the circulation.

A Treatise on the Chemical Constitution of the Brain, based throughout upon Original Researches. By J. L. W. THUDICHUM, M.D. London: Baillière, Tindall, & Cox. 1884. Pp. 262.

FOR many years past Dr. Thudichum has been engaged on an investigation into the chemistry of the brain, and the results of these researches have from time to time appeared in the Reports of the medical officers of the Privy Council and of the Local Government Board. The present volume consists of a systematic consolidation of all the work which the author has done on this subject; and whatever view may be taken as to the quality of the work, there can be no second opinion as to its quantity and its laborious nature.

It would be impossible for us to give within the very limited space at our disposal any analysis of Dr. Thudichum's researches, or even to enumerate the host of new substances which he has found in the course of his analyses. We must confess that, even supposing all these substances to be as well characterised and as definite as we are led to believe, we fail to see that there is any proof that they all, if any of them, exist in the living brain, or that their discovery throws any light on the physiology or pathology of this organ. Indeed we think that an attempt to unravel the physiology and pathology of such a complex organ as the brain, by an analysis of its substance as a whole, is nothing short of an absurdity. This, however, is not the opinion of the author. He speaks of changes in the sick body which *have been proved* to arise from decomposition in the lecithins of the brain. The protrusion of the brain substance through a wound in the skull finds

explanation in simple excessive hydration of the phosphorised (and nitrogenised) principles producing general intra-cranial pressure. The morbid alteration of the nerve-marrow (what Dr. Thudichum understands by nerve-marrow or neuroplasm we do not exactly know) in locomotor ataxia, and the occurrence of a kind of glyco-hæmia *have been shown* to be intimately connected with patholytic changes in substances of the group of cerebrosides, and we are promised information on the nature of general paralysis and melancholy. Again, the reader is assured that he will be rewarded for the labour of reading through the details of the researches contained in this volume by finding that the explanation of the mental phenomena, and of their aberration under the influence of disease, will seem much less difficult than before he was acquainted with these new discoveries.

Judged as purely chemical work, these investigations must be left to the physiological chemists, on whom the author's views seem as yet to have made but little impression. Dr. Thudichum is careful to tell us what is his own estimate of his researches, which he undertakes to assure us "are of fundamental importance, and that all further developments in chemical neurology must start from them as a basis. I say this in view of the records of the work of all those who have grappled with the problem before me, and in kindness to all who may like to deal with it hereafter." Again, "it is not asserted that the absolute limits of the subject have anywhere been reached; but it is confidently believed that its entirety has been explored in such a manner that fundamental truths cannot have escaped observation, and that what remains to be done is essentially of the character of detail, which, however vast by multiplicity it may become, will not alter the broad outlines which this investigation has led me to state."

Dr. Thudichum speaks of himself as "preaching in the desert," when in 1866 he propounded his theory of the fall of temperature in the algide stage of cholera. Now, in 1884, we do not find that this theory has gained any wider acceptance, and not only on this subject but on most others on which he preaches, his voice is very much that of one that crieth in the wilderness. It may be that everyone else is wrong, and that he is the true forerunner of a newer and truer chemistry than that which we have hitherto known, but we must say that appearances are against him. In the last twenty years he has not made much way either in convincing his opponents or in founding a school of his own; he still stands

alone—his hand against every man and every man's hand against him. In a former notice of some of his works we alluded to this unfortunate isolation, and ventured to suggest that it was in great part due to the unnecessary pugnacity displayed in putting forward his own views, and the open and undisguised contempt which he displays for other workers in the same field as himself. In the present volume we find the same characteristics. For instance, in speaking of the researches which have been made in the causation of disease, more particularly by parasitic invasion, the author styles them "a kind of fishing for supposed disease-poisons, of which, according to my view of the subject, the attempt of the boy to catch a whale in his mother's washing-tub is an appropriate parable." We think, however, that there are few who will not be ready to admit that the value to science and practical medicine of this fishing has been, to say the least of it, as great as that which has resulted from a study of the chemolysis of the principles extracted from the brain.

LOCALISED SWEATING IN LOCOMOTOR-ATAXY.

MANY phenomena pointing to an affection of the sympathetic nervous system in locomotor-ataxy have been recorded. Amongst them are—the altered conditions of the pupils, the gastric, intestinal and vesical crises, the permanent acceleration of the pulse which has sometimes been observed, the alterations in the secretions of the alimentary canal, the cutaneous ecchymoses and eruptions, and, according to some, the affections of the nails and joints. To these we must now add alterations in the functions of the sweat glands. In the *Revue de Médecine* for May, MM. Raymond and Artaud describe the case of a man, aged forty-six, who was the subject of ataxy, and who presented a well-marked sweating confined to the right side of his face after each meal. This came on in from ten minutes to a quarter of an hour after the meal, and was not associated with any change in the pupil; the sweating occupied the corresponding side of the head and neck, extending to the shoulder. There was no affection of smell or taste, but the patient said that there was increased flow of saliva on the affected side during the sweating. The injection of pilocarpine did not seem to cause more sweating on one side of the face than the other. The authors mention that they have already recorded two cases in which the sympathetic ganglia were found to be affected *post mortem*, and they allude to Pierret's view that the central origin of the sympathetic lies in the posterior vesicular columns and tractus intermedio-lateralis of Clarke—a region which is very commonly found to be sclerosed in cases of locomotor-ataxy.—*Med. Times.*

PART III.

HALF-YEARLY REPORTS.

REPORT ON FORENSIC MEDICINE.

By H. C. TWEEDY, M.D., Dubl.; M.K.Q.C.P.; Diplomate in State Medicine, Trin. Coll. Dubl.; Fellow and Examiner Royal College of Surgeons; Physician to Steevens' Hospital.

1. Poisoning by Illuminating Gas.
2. Suicidal Wounds of Heart.
3. Cerebro-Spinal Changes in Starvation.
4. Prolonged Fasting.
5. Fatal Case of Earth-eating.
6. Hanging as a Death-Punishment.
7. Homicide or Suicide?
8. Surface Markings caused by Electricity.
9. Dental Jurisprudence.
10. Arrest of Putrefaction.

I. PETTENKOFER ON "POISONING BY ILLUMINATING GAS."

IN the January number of *Nord und Süd* the distinguished Professor of Hygiene in Munich has given the results of recent observations on this subject.

Orfila's experiments, and subsequently Gruber's, in Pettenkofer's laboratory, have demonstrated that the poisonous properties of coal-gas are due to an admixture of carbonic oxide in the proportion of about 10 per cent. Carbonic oxide affects the blood corpuscles by displacing the oxygen in them and forming a combination with their hæmoglobin. A mixture of 1 part of carbonic oxide per 1,000 of air produces decided symptoms of poisoning, and a mixture of over 4 per 1,000 causes death within 60 minutes. Primarily carbonic oxide appears to affect the blood, but the symptoms are plainly due to the action of the altered blood on the brain and spinal cord. The respiratory centre in the brain appears to be affected at the onset; this is succeeded by weakness and uncertainty of voluntary movements, with stupefaction, followed in severe cases by convulsions and death.

Out of twenty-two instances recorded in Munich, twenty occurred during the winter—a fact which Pettenkofer explains by the supposition that the heated dwellings have a tendency to draw up the soil air into them after the manner of cupping-glasses. He also shows that an atmosphere containing 1 per cent. of coal-gas is poisonous, and that when it rises to between 4 and 6 per cent. life is in great danger.

M. Leudet (*Jour. de Méd.*, Oct., 1883) states that the first effect of the inhalation of charcoal fumes (CO and CO₂) is to produce a condition of unconsciousness, due to their action on the cerebral nervous system, but that transient paralytic affections may be brought about, should the peripheral nervous system be acted on.

II. SUICIDE BY TWICE WOUNDING THE HEART.

Dr. Ramikh records the following case in the *Proceedings of the Tula Medical Society*, 1882:—A medical assistant inflicted on himself with a dagger six wounds in the left side of the chest. Four of these wounds were found to be only superficial, but the remaining two wounds—one in the fifth intercostal space, and another in the sixth—penetrated into and through the wall of the left ventricle. They were parallel to each other, and almost perpendicular to the long axis of the ventricular cavity, and measured in length nearly one inch each. Dr. Ramikh thinks that it is the first published instance of a suicidal double wound of the heart.

In contrast with this case may be mentioned another, reported in the *Edinburgh Medical Journal*. The patient was a lady, aged fifty-six, with a strong suicidal tendency. A large shawl-pin, $3\frac{3}{4}$ inches long, was buried in the chest for $2\frac{3}{4}$ inches, at the situation of the apex beat. The symptoms which followed were—unconsciousness, widely dilated pupils, rolling of the head, paralysis of the left side, feeble radial pulse on both sides, and slight vomiting. Removal of the needle was followed by rapid recovery. Though the position of the wound would render it probable that the heart had been penetrated, it is not stated that any motion was communicated by the heart to the needle.

III. CEREBRO-SPINAL CHANGES IN STARVATION.

Dr. V. Mankovsky, in the *St. Petersburg Inaugural Dissertation*, 1882, publishes the results of a series of interesting experiments on rabbits and dogs. One group of the animals was submitted to absolute fasting; the second group was allowed to drink; the third was only underfed; and in the fourth the

animals, after a period of absolute fasting, received full diet for a while, and then were killed. The author thus summarises the results of his microscopical researches:—"1. The tissues of the brain and spinal cord undoubtedly undergo morbid changes in cases of starvation ending in death. 2. The changes in the central nervous system are quite identical with those observed in other organs of the body—in other words, these changes are simple atrophy and degeneration of the elements. 3. The main alterations attack the ganglionic cells, the vessels suffer far less, the nerve-fibres and neuroglia remain intact. 4. The vascular changes consist in intumescence of the epithelioid nuclei and proliferation of the epithelioid cells. 5. The changes occurring in fully fasting animals, or in those receiving only water, and in the underfed, are identical. Traces of morbid changes may be yet found even when the animal, at first starved and then fed, appears to have fully returned to its normal condition."

IV. PROLONGED FASTING.

Dr. Charles J. Renshaw (*Brit. Med. Jour.*, Jan. 5, 1884) gives a noteworthy case of prolonged maintenance of life with a minimum of nourishment. The patient was a lady, aged fifty-eight, suffering from cancer of the womb. The pain was great, and to relieve it morphia was administered hypodermically twice daily in large quantity:—"The cancer increased to such an extent that two months before the death of the patient the bowels were completely occluded, neither allowing the injection of food, nor permitting defæcation. There was secondary deposit of cancer in the stomach, causing very considerable pain on taking nourishment, and excessive vomiting, so that from August 14th to September 24th, the day of her death, the patient took nothing but water." Thus she had been for thirty-nine days supported on morphia and water only.

V. A FATAL CASE OF EARTH-EATING.

Dr. B. Rake (in the *British Med. Jour.*, May, 1884, p. 994) records the case of a Hindu woman, aged thirty, who was admitted into hospital on account of eating earth. She continued in her usual state for about twenty-four hours after admission, but the next morning, about 9 a.m., she fell rapidly into a state of collapse; pupils contracted, pulse feeble, extremities cold. There was no vomiting whatever. Death followed in a few hours without any further symptoms arising. A *post mortem* examination was made, but *no signs of poisoning* were detected. Altogether

there must have been a quarter of a pound of earth in the stomach and intestines. The author gives two theories as to the ultimate cause of death :—1. Simple exhaustion after prolonged dirt-eating and starvation. 2. Pressure of the weight of earth in the stomach on the abdominal sympathetic, as in cases recorded of sudden death from an overloaded stomach.

VI. DEATH-PUNISHMENT BY HANGING.

Under the head of “*Nugæ Hibernicæ*,” in the *Brit. Med. Jour.*, Jan. 5, 1884, are some details of the mechanism of hanging as a death-punishment. Till recently the employment of a short drop, with consequent simple strangulation, led frequently to very painful scenes; but since the employment of the “long drop,” fracture of the transverse process of the second cervical vertebra is caused, and instantaneous death takes place by injury to the medulla oblongata.

The drop in Ireland ranged at first from 10 feet to 17 feet, and death was instantaneous. Two cases occurred in which the weight of the criminal was the same—viz., 160 lbs., and the “long drop” the same—viz., 14 feet; but in one case the transverse processes of the second vertebra were broken across, and in the other case the head was cut off by the rope. A scientific investigation of the ropes followed, and the cutting off of the head was found to be due to deficient elasticity of the rope. These cases led to a full discussion of the whole question, and particular attention was paid to the position of the noose, for which three positions were advocated—viz.: 1. The occipital position. 2. The subaural position. 3. The submental position.

1. The “occipital knot” had practice in its favour handed down from the old times of the “short drop;” but experience showed that the “long drop” and “occipital knot” divided all the soft tissues of the neck, except the skin, before the blow reached the second cervical vertebra and medulla oblongata, and there was not sufficient margin of resistance to prevent the head from coming off.

2. The “subaural knot” was merely a hangman’s ignorant idea, and had no support from anatomy.

3. The “submental knot” and “long drop” delivers the first shock on the spine (like killing rabbits by a blow on the back of the neck), and causes immediate death without dividing the soft parts of the neck, which remain to protect the head from coming off.

After the adoption of the “submental knot” the “long drop” was reduced from 12 feet or 14 feet to 8 feet, and the results

have proved that an 8-foot drop, with "submental knot," will produce a greater destruction of the transverse processes of the cervical vertebræ than a 14-foot drop with the "occipital knot." The transverse processes have been fractured as far down as the fourth vertebra, and death is of course instantaneous, and that without risk of taking off the head.

VII. THE CASE OF THE LATE MR. TOWER—HOMICIDE OR SUICIDE?
STRANGULATION OR DROWNING?

The *Brit. Med. Jour.*, Feb. 16, 1884, commenting upon the criticisms of "a usually well-informed evening newspaper" on the medical evidence given by Mr. Bond and Mr. White, and the verdict of the coroner's jury in this most melancholy and mysterious case, gives in full the details of the necropsy, and adds further:—"That death was the result of asphyxia there can be no doubt; and that this asphyxia resulted, at all events in great part, from the application of a ligature appears to be equally clear. The handkerchief tied round the neck when the body was found in the water had been removed by Mr. White before the necropsy had been made by Mr. Bond. It was tied behind in three tight knots. The evidence as to the degree of tightness of the ligature itself is wanting. More than one knot is, nevertheless, consistent with suicide. Beck relates a case of a female suicide who tied a handkerchief round her neck from behind forwards, made a knot in front, returned the ends, and made a second knot at the back of the neck. Tardieu also relates, second-hand, the case of a girl who, in spite of a maimed right hand, passed a handkerchief two and a-half times round her neck, and then fastened it on the left side in two knots, the first knot being the tighter of the two, and the fatal pressure must have been exerted before the second knot was tied. Hence the suicidal theory is not, as we believe, excluded by the results of the *post mortem* examination. It is remarkable that there was an absence of all signs of violence except the two inconsiderable abrasions on the lip and ear."

Mr. Bond's conclusions were that insensibility had been caused partly by pressure of the handkerchief and partly by pressure over the mouth and chest while in a struggle with two or three other persons, and that while thus insensible the victim was thrown into the water, the usual signs of death by drowning being absent, and that death could not have been the result of suicide.

As a commentary on the above case, Dr. A. Lesser's observations

on "Necropsies of the Drowned" (*Vierteljahrsschr. für gerichtl. Med.*, 1884, p. 1), as epitomised by Dr. Stevenson, are interesting. Dr. Lesser reviews from the point of his own experience the *post mortem* appearances met with in the drowned, more especially with reference to diagnosis of the cause of death. He attaches but little importance to the data met with on a *post mortem* examination. The contents of the stomach and intestines are, he thinks, of no import. Inflation of the lungs proves nothing as to the cause of death. Apart from abnormalities of the pulmonary parenchyma—*e.g.*, vesicular emphysema, considerable pulmonary œdema is constantly met with when the air-way is impeded, be the hindrance in either the smaller or the larger bronchi, in the trachea, or in the throat, and whether the obstruction take place during life or after death (*e.g.*, ejection of the contents of the stomach).

In capillary bronchitis the relations of the smaller bronchial tubes to the pulmonary tissue are exactly the same as are constantly met with in drowning; also the presence of mucus in the larger bronchial tubes as a cause of the pulmonary inflation is irrelevant to the question. It is only when very abundant masses of fine froth are found, more or less completely filling the larynx and trachea, when the origin of this froth *in loco* is manifest (absence of œdema of the lung, *e.g.*), if simultaneously mucus in the smaller bronchi prevents pulmonary collapse, that, according to Lesser, the diagnosis of death from drowning can be made from the results of the necropsy alone; for, according to his experience, such aggregate results never ensue from catarrh. When in an undecomposed corpse, with healthy respiratory organs, no inflation is found, and this in consequence of there being mucus in the smaller bronchi, death by drowning is excluded. In putrid bodies, or with the putrefactive processes advanced in the bronchi and the lungs alone, this conclusion is no longer tenable. The absence of air vesicles in the larynx and the trachea does not exclude the immersion of the body in the medium before death, just as the presence of air vesicles in the tracheal and laryngeal fluids is compatible with the production of these after death.

While touching upon the subject of suicide by asphyxiation, two cases recently recorded by Dr. Nobiling, of Munich, in the *ärztliches Intelligenzblatt*, will be found worthy of notice. The first case was that of a delicate young man, aged twenty-four, who, having been crossed in love, put an end to his life in the following manner:—He folded a large cotton handkerchief diagonally, tied

the two ends and fastened them to a door latch only three feet seven inches from the ground, put his head through the loop thus formed, drew up his knees and threw himself forward. In this position he was found quite dead, with his knees at a right angle, his shins almost touching the floor, against which the toes actually rested. The weight of his head and shoulders pressed the front of his neck downwards against the handkerchief, which did not touch the back of his neck at all. The hyoid bone, with the root of the tongue and larynx, had been jammed upwards and backwards against the posterior wall of the pharynx, so that the air passages were completely closed. The lungs were very œdematous, and there were minute points of extravasated blood underneath the conjunctivæ, pleuræ, and pericardium, and in particular the endocardium of all the chambers of the heart were studded with small hæmorrhagic spots.

The second case was that of a stout man, aged forty, subject to melancholia, who, having mounted a stool, had fastened a stout cord to the cross piece of a high window, and, having made a loop at the other end of the rope, put his head through and kicked away the stool. He was found lifeless, with the tips of his toes far from the ground, and his neck closely constricted by the cord, which had made a deep furrow round the neck above the thyroid cartilage, constricting the anterior and posterior cervical muscles so closely as to have caused hæmorrhage into their substance. There was also much extravasation of blood into the connective tissue within the sheath of the great vessels of the neck, which, however, had themselves escaped injury. As in the former case, the larynx was forcibly drawn up against the back of the pharynx, the mucous membranes of the larynx, trachea, and bronchi were deeply congested, and there were circumscribed hæmorrhages under the right vocal cord, the areolar tissue beneath the pleuræ, and the pulmonary tissue.

VIII. SURFACE MARKINGS CAUSED BY ELECTRICITY.

Mr. J. Y. Mackey (*Edin. Med. Jour.*, 1883, Vol. II., p. 560) records a case in which he observed markings on the body of a boy who had been struck by lightning. They were not permanent, but before they had faded he was fortunate enough to obtain photographs of them.

The boy remained unconscious for some time after being struck, and after he had recovered was unable at first to remove his hands

from his pockets, where they had been at the time of the accident. There was also a sensation of numbness and coldness in the arms, and the boy thought they were broken at the elbows. Afterwards, as he complained of a tingling, his coat was taken off, and then the markings were discovered, spreading like the branches of a tree from below the left elbow to the shoulder and across the left side of the chest. They seemed to ramify from two distinct points, as if the lightning had struck the arm in two places, and had thence spread over the skin. The marks were red in colour, slightly raised, and presented the appearance of the fronds of a fern, but did not correspond with the course of the vessels. The surface temperature of the arm was higher than that of the rest of the body. The marks retained their original appearance for two hours, after which they began to fade, and after eight and a half hours were scarcely visible.

IX. DENTAL JURISPRUDENCE.

Under this head, at the March meeting of the Odontological Society of Great Britain, an instructive communication was read from Mr. F. R. Lloyd, of Mussoorie, North-West Provinces of India, relating a case which had been submitted for his decision:—A gentleman's servant came to Lahore, saying that his master had been killed by savages while travelling in Kashgur, and that a head which he brought with him was that of his master. But Mr. Lloyd was able to decide, after careful examination of the teeth, that the head must have belonged to a much older man than the gentleman said to have been murdered; and, further, that it was the head of a native, and not of a European.

X. ARREST OF POST MORTEM PUTREFACTIVE CHANGES.

1. *Formation of Adipocere*.—Dr. W. H. Taylor (*Boston Med. and Surg. Jour.*, Vol. CIX., p. 461) recounts the following case:—A woman, forty-two years of age, died (after a fortnight's illness) on March 24th, and was buried on March 27th. Suspicion having arisen that her death had resulted from poisoning by gelsemium, she was disinterred on May 2nd, after a lapse of thirty-six days, and a *post mortem* examination was held. No traces of poison were found in the body. The soil in which she had been buried was dry and gravelly, the grave five feet deep, and the churchyard on the top of a hill. The body was that of a well-nourished female, the face fresh in colour, and the eyes moderately sunken.

There was strongly-marked rigidity. The abdominal walls sounded on percussion like those of a frozen corpse. The entire integument was hard, tallowy-feeling, indenting on firm pressure, and the indentations were persistent. There were no external indications of putrefaction, and no odour of decomposition before or after section. An animal odour was perceived, somewhat resembling a urinous odour, but not offensive. The skin of the abdomen and the whole anterior surface of the body were white and clean as during life. The back and posterior aspect of the arms, forearms, thighs, legs, and neck, were of a bright red colour, which extended half-way up to the lateral aspect of the body and limbs, differing in hue materially from the usual cadaveric staining, the appearances being rather those of a part reddened by inflammation. On making a median section the feel was that of cutting through soap or tallow; the margins of the cut had to be forcibly separated, and would then remain in the position in which they were placed. The abdominal and pleural cavities were free from moisture, and the viscera perfectly fresh. The heart was collapsed and dry, its walls were flabby, and the muscular fibres somewhat fatty under the microscope. The brain and spinal cord were slightly softened. Bodies buried in this church-yard are frequently stated to have undergone adipocerous changes.

2. *Mummification*—Dr. Ermann (*Vierteljahrsschr. für gerichtl. Med.*, Band XL., p. 33) describes two cases of exhumation in which this change was observed. In one case death had resulted from arsenical poisoning, $3\frac{1}{2}$ grains of arsenious acid being found in the stomach. This corpse had been buried two years. In the other case no arsenic was found, and this body had also been buried for about two years.

M. Depérais has published, in the *Gaz. Méd. de Paris*, No. 9, 1884, the details of a new process by which, he states, mummification may be artificially produced. The body is to be placed in a solution of chloride of calcium (47° Beaumé), maintained for some time at a temperature of 106° C. (228.8° F.). The water of the tissues is gradually replaced by the solution. The process is accompanied by a distinct shrinking of the corpse, which is then placed in a cold saturated solution of sulphate of sodium. Sulphate of calcium is formed, and remains in the tissues, while the chloride of sodium is dissolved by the water. The body can then be taken out and dried in a stove, and the result is complete desiccation.

(To be concluded.)

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. BANKS, M.D.

General Secretary—W. THOMSON, M.D.

SURGICAL SECTION.

President—WILLIAM IRELAND WHEELER, M.D., President, R.C.S.I.

Sectional Secretary—WILLIAM STOKES, F.R.C.S.I.

Friday, April 4, 1884.

The PRESIDENT in the Chair.

Living Specimens.

MR. HAYES.—Case of radical cure of hernia. MR. CROLY.—(1) Excision of the knee; (2) excision of the elbow; (3) fracture of the patella treated by the expectant method. MR. LAMBERT H. ORMSBY.—(1) Case of diseased cervical vertebra in a child treated by spinal support and jury mast; (2) case of large cervical tumour. DR. C. B. BALL.—Patient in whom radical cure of hernia has been effected by torsion of the sac. MR. A. H. BENSON.—Cases showing the result of Dianoux's operation for entropium.

Specimens Exhibited by Card.

The PRESIDENT, MR. HAYES, MR. LAMBERT H. ORMSBY, DR. JACOB, MR. THOMSON, and DR. C. B. BALL exhibited specimens by card.

Pharyngotomy.

The Chair having been taken by MR. O'GRADY,

The PRESIDENT read a paper upon two successful cases of pharyngotomy. The first was that of a man aged forty-five, who swallowed a threaded needle, eye foremost. His efforts to withdraw the needle by pulling the thread only served to imbed the point more deeply. He was admitted to hospital two days after the occurrence. Various attempts

at removing the needle having proved unavailing, pharyngotomy was undertaken. An incision was made on the left side of the neck from the body of the os hyoides to the superior margin of the cricoid. The parts were caused to bulge by passing a staff into the mouth and pharynx, and upon the point an incision was made, the opening being then enlarged with the fingers. The needle was found imbedded in the tissues. It was exposed by scraping with the finger nail and by slight traction of the thread, and grasping the needle with a forceps it was withdrawn. The patient recovered. In the second case a lady had suffered some months from what was supposed to be ordinary sore throat. On examination a tumour about the size of a small egg was found situated below the level of the epiglottis on the right side in the sinus pyriformis. The symptoms of obstruction becoming urgent, it was determined to remove the tumour. An incision was made in line of the right sterno-mastoid muscle from one inch below the angle of the jaw to the level of the upper ring of the trachea. The pharynx was opened by dividing the tissues on the projecting end of a catheter introduced through the mouth, and the wound was enlarged, first by a forceps, then by the fingers. The tumour, which sprang from the styloid ligament and process, was removed piecemeal, and was found to be a spindle-celled sarcoma. The patient made a good recovery, but the disease returned in a few months and she succumbed. Mr. Wheeler emphasised the necessity of a free external incision, a small incision into the pharynx, which can be dilated as described, in order that the nerve filaments may not be irreparably injured. He deprecated the employment of sutures, and advocated the establishment of ample drainage.

MR. TUFNELL, having seen the two cases, concurred fully in what Mr. Wheeler had suggested as to the feasibility of a large free external incision, the advantage derived from which was most desirable. Nothing could be more satisfactory than the mode of performing the operation and the result. He referred to a case in which Liston extracted a pike-hook from the pharynx of a boy, first by freeing the hook from its attachments and next by jerking the double ends into a sponge. A needle might be broken in the extraction.

MR. STORY said the needle could be cut in two, and then extracted by means of a magnetised forceps. He instanced a case of a boy who had swallowed a needle. The boy was, on his recommendation, kept on slops in the hope that the needle would work down with the fæces, which it did in a few days.

The CHAIRMAN remarked that one case was seldom a guide to another. Early pharyngotomy ought to receive attention.

MR. HEPBURN testified to the benefit resulting from the operation.

MR. FRANKS considered the great point was whether foreign bodies

in the pharynx should be removed by an internal or an external operation. Opinion justified the necessity of pharyngotomy in certain cases, but where there were two natural cavities the question of the necessity of making an unnatural opening did not arise at all. In England the question was discussed of opening the thyroid cartilage or the larynx to get at foreign bodies, and the consensus of opinion was against external operation until every effort by natural means failed. The laryngoscope should be employed, and where a foreign body was seen in the pharynx it could in the majority of cases be easily got out. Laryngotomy should only be used in extreme cases. In most books pharyngotomy was not mentioned, and the reason was that, as a general rule, the operation was unjustifiable.

MR. M'ARDLE would confine pharyngotomy to such tumours as Mr. Wheeler had mentioned, but he did not see how a tumour growing from the styloid process could be extracted through the mouth without injuring some of the large vessels.

DR. HARLEY testified to the immediate relief derived from the operation.

MR. THOMSON asked whether the tumour did not spring from parts external to the pharynx altogether. If that were so, there was no occasion to perform pharyngotomy except for the convenience of putting in the finger to push the tumour upwards.

The PRESIDENT, in reply, said he had contemplated cutting the needle across with a forceps, but he did not succeed, though he had the aid of Dr. Haughton and two engineers. Of course he would not perform pharyngotomy where he could remove the tumour through the mouth. Tumours of the pharynx growing from the base of the skull could not be removed through the mouth. The laryngoscope was a great help in diagnosing the exact situation of the needle and the tumour. The wall of the pharynx was outside the tumour.

Notes on Stricture of the Rectum.

The PRESIDENT having resumed the Chair,

MR. M'ARDLE brought forward a case of stricture of the rectum in which linear rectotomy had injured the patient, and dilatation by bougies was ineffective. Having reviewed the various methods of treating intractable stricture, and shown that the mortality after colotomy was as great as that after excision of the rectum, he invited opinion on the method of excision by musculo-cutaneous perinæal flap and retention of external sphincter, as advocated by Busch of Berlin.

MR. HAMILTON regarded one operation only as absolutely radical for cancer of the rectum. Linear rectotomy was only a palliative operation, not curative, but he could hardly say the same of colotomy. It was of course palliative, and gave a great deal of comfort. The only radical cure was extirpation of the bowel, but the cases in which that operation

could be performed with satisfaction were very few. Where the limit of the disease could be reached with the finger the rectum might be removed with a fair chance of success. The patients knew when fæces were about to pass, and made arrangements accordingly, but once the fæces came down control was lost.

Case of Ununited Fracture of the Femur.

The SECRETARY, for SURGEON-MAJOR TOBIN, read the particulars of a case of ununited fracture of the femur, which was under treatment in Netley Hospital in February, 1883. The injury was sustained whilst the patient was on active service in Egypt. He was in the mounted infantry, and on August 6 his horse ran away and dashed him against a tree. The injury was first treated by a long Liston's splint. Whilst in hospital he got an attack of enteric fever, which lasted about five weeks. About six weeks after the receipt of the injury the splint was removed, but no union was found to have taken place. A M'Intyre's was now substituted, and after six weeks a gypsum bandage was applied and left on for several weeks; still no union took place. On the patient's admission into Netley the shortening was $2\frac{3}{4}$ inches. On May 18, 1883, the situation of the injury was exposed, and the fracture was found to be a comminuted one. The ligamentous union between the fragments having been divided, the lower fragment was made to protrude and its upper extremity excised. The lower extremity of the upper fragment was removed by a chain saw, and the two fragments were then wired together. To counteract the tendency to tilting forwards of the upper fragment it was decided to put the leg up at nearly right angles to the body. In carrying out this plan an ingenious apparatus devised by the author was employed, by which all the necessary requirements were fulfilled. The patient's recovery was uninterrupted, and when the apparatus was removed firm osseous union was found to have taken place. The shortening was $2\frac{3}{4}$ inches. When this shortening was compensated for by a suitable boot the patient soon learned to walk about with freedom.

DR. HENRY KENNEDY mentioned a case of ununited fracture of the humerus in which the late Mr. Colles had failed for several months, but the fever excited by mercury procured success. The parts were in apposition, and there was no difficulty in keeping them together, but they would not unite.

The PRESIDENT recalled the case of a gentleman aged seventy, who, whilst sliding on the ice in Stephen's-green, broke his thigh-bone. He had broken his tibia and fibula some years before in Manchester, and the leg was shorter than when he met with the accident on the ice, but he went out of hospital all right.

The Section adjourned.

Friday, May 9, 1884.

The PRESIDENT in the Chair.

MR. THOMSON, General Secretary, in the unavoidable absence of Mr. Stokes, Sectional Secretary, read the minutes of the previous meeting, which were confirmed.

Living Specimens.

The PRESIDENT.—Two cases of excision of the knee in youths aged eleven and thirteen years respectively. MR. O'GRADY—Two cases of amputation at the hip-joint. MR. STOKES—Case of amputation at the hip-joint.

Specimens exhibited by Card.

MR. COLLES, MR. STOKES, MR. M'ARDLE, MR. KENDAL FRANKS, MR. O'GRADY, and MR. L. H. ORMSBY exhibited specimens.

Acute Traumatic Malignancy.

MR. L. H. ORMSBY read a paper on acute traumatic malignancy, and detailed the history, progress, and result of four instructive cases in connexion with the subject. He endeavoured to prove that a distinct group of malignant tumours, rapidly following local injury, may be classified under the term "acute traumatic malignancy," believing, as he did, that occasionally under the stimulus of severe local irritation the tissue elements which, under favourable circumstances, would assume only the necessary activity for healthy repair, might develop a more prolific cell formation ending in a very rapid development of malignant disease belonging to either the sarcomatous or the carcinomatous formations. In his opinion, however, local irritation was not alone sufficient to account for the rapid development of such tumours, but he believed that it was an important factor when there was already an inherent tumour-forming diathesis present in the constitution, and the local irritation or injury was accidentally received.

MR. THOMSON, referring to the clinical aspect of the cases, said :—If there was an operation to be done at all it should be done at such a distance from the seat of the disease as would render the possibility of its return as remote as possible. In the great majority of these cases the disease returned sooner or later. That evening a case was exhibited in which Mr. Stokes had nearly three years ago performed amputation at the hip-joint with a satisfactory result. The patient had been suffering from one of those tumours consequent on an injury to the thigh. After consultation the limb was amputated at the hip-joint. Though the patient was in an extremely low condition the result was satisfactory, and so improved did

he now appear that there was no indication of a return of the disease. Where the tumour existed in the tibia, the question was whether the patient should be subjected to amputation at the hip-joint, or merely amputation through the shaft of the femur.

MR. ORMSBY, in reply, said the object all should of course aim at would be to go as high as possible above the seat of the disease. He himself amputated at the upper third of the thigh, being afraid of subjecting the patient to the risk of amputation at the hip-joint. At the same time Mr. Stokes' case was very encouraging.

Excision of the Knee resulting in Flexible Joint.

DR. E. H. BENNETT read the notes of a case of excision of the knee, having exhibited the patient at a previous meeting. The child, a girl, is now ten years old, and a period of nearly two years has elapsed since the operation. From early childhood she suffered from disease of the knee, which had led to suppuration with open abscesses. These healed, leaving the knee bent. She then was able to move about, although very lame, until six months before her admission to Sir P. Dun's Hospital, when the disease became re-established, and she could move only with the help of a stick, being unable to bear weight on the joint. Then sinuses existed, and the child's health began to fail. The ordinary operation was performed, a great deal of bone being of necessity removed. The limb was placed in plaster-of-Paris bandage and the wounds closed, but the bones failed to unite. After a treatment of seven months the health was restored, and the limb could be flexed to a right angle, while the girl could stand on it without other support. She walked with trivial lameness, and could go up and down stairs without any difficulty.

MR. THORNLEY STOKER said that the best tribute he could pay to Dr. Bennett's observations would be to endeavour in his next case of excision of the knee to obtain a movable joint, or a movable limb without a joint. He asked was it from theory or experience the sections through the tibia and femur were made? It seemed better to fashion the surfaces resembling the natural surface of the upper surface of the tibia and the lower of the femur.

DR. HAYES asked whether it was preferable to leave the patella intact or to remove it?

MR. CORLEY drew conclusions the reverse of Mr. Stoker's, holding that success in excision of the knee-joint depended on the immobility sought for and the apparatus for securing that immobility. If fibrous union could be secured without endangering the patient's chance of life, the proposed procedure would be justifiable, but the evidence would not justify their looking for a rigid limb.

MR. THOMSON contended that the force of Mr. Corley's objection depended upon whether or not the wound was suppurating. Given a

wound without suppuration, and union almost immediately ensued. If the cut surfaces of the bones were closed in and the wound made subcutaneous he saw no danger from commencing passive motion of a mild character at an early period. There was nothing impossible in looking for a movable joint, the surfaces being fashioned to resemble the original surfaces.

MR. ORMSBY attributed the result more to good luck than good guidance. If passive motion were set up too soon in strumous subjects the end would be amputation. At the same time he did not see why there should not be motion in the knee-joint as well as in the elbow-joint following resection.

The PRESIDENT, having seen the case, said the child had an admirable limb. He had at present a case of fibrous union. He would not set up passive motion fearing the result would be amputation; and he agreed with Mr. Corley that he would not look for fibrous union, but would endeavour to obtain bony union, in which he had been successful.

DR. BENNETT, replying, said he had attained his object in raising the question whether in dealing with excisions of the knee it was good surgery to have two strings to one's bow rather than be bound down to the rigid rule of osseous union. He had not considered the question of shaping the surfaces. Leaving the patella he regarded as a source of danger, as the focus of disease, but he would leave the tendon intact. The cases requiring the strictest rest were those rare ones of acute disease. Those more suitable for excision of the knee-joint were where the disease had passed the acute stage and deformity existed, and for that class he would obtain a movable joint.

Acute Traumatic Tetanus.

MR. EDGAR FLINN read a paper on acute traumatic tetanus, and brought under notice a case which had been treated in St. Michael's Hospital, Kingstown. It was that of a labourer who had the middle and ring fingers of his right hand severely crushed. Symptoms of tetanus presented themselves on the fifth morning after the accident. The treatment relied on was cannabis indica gr. $\frac{1}{2}$ in pill every second hour, with hydrate of chloral and bromide of potassium in mixture, 20 grs. of each, every fourth hour, to relieve the severity of the tetanic spasms. Inhalations of nitrite of amyl were used with very marked relief. Nutrient enemata, consisting of brandy, beef-tea, and opium, were given twice a-day. Hypodermic injections of morphia were frequently given during the progress of the case, more especially at night. An ice-bag was applied to the spinal column. The patient underwent all the symptoms of acute traumatic tetanus in a marked form. He left the hospital six weeks and a-half after receipt of the injury in good health, but very much emaciated.

DR. F. A. NIXON mentioned an acute case in Mercer's Hospital, where the brother of the notorious Joe Brady, having suffered from an injury to

his foot, and had his great toe amputated, recovered after a severe struggle for life.

MR. M'ARDLE drew attention to five cases—two that were cured under Dr. Mapother's care, and three fatal under his own. Dr. Mapother had administered 30-grain doses of hydrate of chloral per rectum. Experimenting on the lower animals he used the electric current, and when applied from the nape of the neck to the middle of the lumbar region the spasms ceased. In his own cases the disease came on in one, two, and four days respectively after the injury.

MR. THORNLEY STOKER's experience was that nearly every case of tetanus occurring within eight or ten days after the injury died, and nearly every case that occurred twelve or fourteen days after the injury got well. He knew of no treatment that did any good in the acute cases.

MR. M'ARDLE mentioned a case that came on two months after the injury.

MR. DOYLE said he had been called to see a case pronounced to be colic, but which he recognised as well-marked tetanus, and found that it arose from a neglected ulcer on the leg. Iodoform applications effected immediate improvement. Hydrate of chloral and bromide of potassium were administered in 10 or 15-grain doses every half hour with or without morphia. The patient went on remarkably well, and recovered.

DR. BENNETT observed that where tetanus occurred two or three days after the injury the cases were fatal, but where it did not the disease must be subacute, and there was a fair chance of recovery. Where the wound was open, tetanus might at any time supervene. He had seen it occur in a case of compound fracture of the finger two months after the injury.

MR. CORLEY commended Professor Smith's classification—hyperacute, acute, and chronic. In the first the disease was immediate and invariably fatal. The acute cases occupied the boundary line, and the chronic usually recovered. No doubt, cases had recovered by nerve stretching, but there was nothing more unphilosophic than stretching a nerve to cure disease of the spinal cord.

The PRESIDENT said the longest case he had seen was of seventeen weeks' duration, and the shortest was forty-eight hours. He had seen fatal cases of tetanus following burns thirteen days afterwards. In the case of a young girl in the City of Dublin Hospital, showing signs of tetanus, the treatment consisted of belladonna, hydrate of chloral, bromide of potassium, and ice to the spine; but as she was growing worse, and dying, he stretched the median nerve, and, the spasms ceasing, she recovered. In Mr. Flinn's case nerve stretching had not got a fair trial, as both the great sciatic and anterior crural nerves ought to have been stretched.

MR. FLINN said the great sciatic nerve was stretched.

The Section adjourned.

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1883-84.

President—PROFESSOR DILL, M.D.

Hon. Secretary—WILLIAM G. MACKENZIE, L.R.C.P. & S. Edin.

PROFESSOR DILL in the Chair.

A Short Statement on the Structure and Dilatation of the Os and Cervix Uteri, with an Exhibition of Uterine Dilators, including Hegar's.

PROFESSOR DILL said :—The subject which is on your notice paper for present consideration, but which has stood over from our last meeting, is possessed of much interest; and although we have been favoured by members of the profession with many contributions towards its elucidation, yet, if I may be allowed to indulge in a little facetiousness, I would say that it may, with some advantage, be further *dilated* upon.

And now, although it scarcely comes within the scope of the discussion of our subject—viz., Dilatations of the Os Uteri and Dilators—yet a few observations regarding the condition and the character of the os and cervix uteri may be here introduced with some advantage before we enter upon the more experimental and practical department of our inquiry. We may, in the first place, assume that the os and cervix uteri are formed of circular and longitudinal muscular fibres, but it is not so easily to be assumed, that while the circular fibres exert a large share in the formation of the os, that they consequently represent a true sphincter muscle. So that if the word sphincter is to be here used at all, it must be but theoretically, as the idea of sphincter is not supported by the way in which it acts or dilates.

The os yields and expands slowly and gradually, and in this way its dilatation does not resemble the comparatively sudden response or characteristic relaxation made by a sphincter muscle; for if it were such, should we not have quick labours, as far at least as dilatation of the os uteri is concerned? We cannot afford, therefore, to be so dogmatic as to attribute altogether to muscular contraction the resistance given by the os uteri. Is it not probable, therefore, that it is the mixed condition and character of the tissues of which the os and cervix uteri are formed, composed as they are of not only muscular fibre, but of a firmly condensed connective tissue, binding together the whole structure, which, in this compact condition, offer such a powerfully resisting force as

to be merely overcome by the perseveringly repeated efforts of the uterus?

I am inclined to advance this explanation as at least the nearest approach to the truth, and because of the fact that the os uteri at first becomes thinner and thinner, and then it slowly opens. As we find, occasionally, that the os uteri takes a much longer time in dilating than is known to be consistent with the safety of the patient, it has been proposed that artificial means should be instituted towards overcoming this difficulty. This branch of the subject has received the best attention from not a few of our ablest obstetricians, with the result that we are now in possession of a large array of uterine dilators, and those are of different kinds, and forms, and sizes.

The forefinger was at one time very much used, and by many persons it is occasionally used still, for the purpose of assisting to dilate an unyielding os uteri.

The late Sir James Simpson, at an early period in his history, contributed to us his admirable sponge-tent; and in the sea-tangle, *laminaria digitata*, or *tupeto*—which was discovered by Dr. Sloan, of Ayr—we possess an agent much and successfully used as a dilator, and which was at once ingenious and original. But, acting upon the recognised fact that the dilatation of the os and cervix uteri is essentially dependent upon the eccentric pressure exerted by the liquor amnii, Barnes discovered an equivalent action and corresponding results from his hydrostatic dilators, or as they are now known and used as air-bags.

There is another class of instruments, with two or more branches or limbs, which move by a spring or hinge; when closed they are introduced into the os and cervix uteri, and, when in, these limbs or branches are separated or expanded with less or more force. To this class belong the dilators of Priestley, Braxton Hicks, Marion Sims, Ellenger, and Brusch.

Another class, which we may here designate as graduated dilators, and which originated with Peaslee, Hanks, and Lawson Tait, are conical in shape, are made of vulcanite, and which are from four to ten in number. But it is to Hegar's set of graduated dilators that I would now especially direct your attention, though it was not with him that graduated dilators originated, but with Peaslee, Hanks, and Lawson Tait. Hegar's, however, differ from those others both in shape and number, consisting, as his set does, of twenty-six pieces, each piece measuring five inches in length, cylindrical in shape, and having a handle at the end of each, flattened, and an inch and a-half in length. These bougies, as they may be called, are graduated in size, the first being one-eighth of an inch in diameter, and they go on increasing at the rate of about half this size, or one-sixteenth of an inch.

When about to introduce one, the patient should be placed on her left side, and in Marion Sims' position, the under limb brought well towards

you and the upper one carried as far forward as possible. The speculum is then introduced, and the cervix should be seized and fixed with a vulsellum, and then one of the dilators is introduced, until it passes through the os and cervix uteri. If it is found to pass freely it may be withdrawn at once and the next larger size introduced. If any difficulty be experienced it may be allowed to remain in ten or fifteen minutes; it may then be withdrawn and the next number can be introduced with ease, and so on, until the parts be dilated sufficiently; and just as we find when the os is opening under natural efforts, so, as the operation proceeds, the dilatation becomes easier and quicker, so that we find it becomes completed in from three to eighteen hours; and as we know the relaxing influence exerted upon the uterus by chloroform, I need scarcely say that if this agent be used the operation is performed with more ease and safety.

If syringing the uterus be the physician's object, he need not go further than the sixth or the seventh piece; if the introduction of nitric acid or other medication be his object, he may require to go as far as the ninth or the tenth; if the finger is to be introduced for exploring purposes, he must go on to the sixteenth or seventeenth; but if his object be the removal of a fibrous or other tumour, he must go on to the higher, probably the highest number. In no cases or conditions do these dilators give more satisfaction or meet the ends more efficiently than in imperfect abortions.

These dilators were introduced to this country from Germany about two years ago by Dr. Macan, of the Rotunda Hospital, Dublin; and from my own experience of them within that time I think I am warranted in saying that they will be found to answer their purpose better than any other instrument or method that has been proposed for the easy and the safe dilatation of the os uteri. However, each instrument possesses certain advantages.

Allow me to add, that smearing over the dilators with carbolic oil will much facilitate their introduction, and by so doing may obviate other grave difficulties. It has been stated that one great advantage in the use of Hegar's instrument over the sponge-tent, sea-tangle, or those other complex instruments is, that they do not carry with them septic poison. Although, as I have stated, Hegar's set is made of twenty-six pieces, I believe you may with advantage have a higher number; and the set I have the honour of exhibiting to-night consists of thirty-six pieces.

CLINICAL RECORDS.

Notes of a Case of Indian Enteric Fever. By SURGEON-MAJOR ALBERT A. GORE, M.D.; Fellow of the Royal College of Surgeons, and Member of the King and Queen's College of Physicians, in Ireland; in Medical Charge of the Female Hospital, Staff and Departments, Dublin.

Bronchitis; Severe Hæmorrhage from the Bowels; Great Tympanites; Irregular Temperature; Recovery.—No. 1,347, lance-corporal F. S., 30th Regiment, age twenty-nine, service $14\frac{8}{12}$ years. Landed in India 9th February, 1880, and reached Ranikhet 26th April. A delicate-looking man; married; one of the band; up to the last ten months one of the hardest drinkers in the regiment; was admitted to hospital under my care on 26th September, 1882, complaining of sore throat, cough, and general lassitude. Evening temperature, 100° ; bowels constipated; face pale. Had been ailing about a fortnight immediately after a journey to the bazaar fully two miles off, at 2 p.m., when the sun was rather hot. Returned very quickly along a steep ascent to his quarters. Felt much exhausted. A day or two after, when at the sergeants' mess, "took a shiver;" had fever "off and on," and was for some days ill in his quarters. Drank nothing in the bazaar, and only some lemonade in the coffee shop, supplied from the regimental aerated water manufactory. Water soft and good.

27th, third day of disease.—Morning temperature, 97° ; evening, 102° . Suffering from catarrh of the fauces and pharynx, cough, and tough muco-purulent expectoration; respiratory sounds coarse; no liquid or dry rhonchi; tongue whitish; abdomen somewhat rounded; no gurgling. Ordered diaphoretic and expectorant mixture; ten grains of quinine at 9 a.m.; poultices to the chest.

28th, fourth day.—Morning temperature, 100° ; evening temperature, 103° ; pulse, 75. Few dry rhonchi at base of lungs; much frothy muco-purulent expectoration.

29th, fifth day.—Morning temperature, 100° ; evening temperature, 101° . General symptoms as yesterday.

30th, sixth day.—Morning temperature, 99° ; evening temperature, 100° ; no diarrhœa. On milk diet; two bottles of soda-water to relieve thirst. Ordered inhalations containing a few drops of carbolic acid and oil of juniper.

Oct. 3rd, ninth day.—Morning and evening temperature, 100° ; a

rose spot on abdomen, which is somewhat distended; sputa profuse, glairy and muco-purulent; bowels constipated. Had castor oil on admission. Ordered turpentine stupes to abdomen.

4th, tenth day.—Temperature fell to normal, but rose to 101° in evening; next morning normal; pulse, 80; skin cool; much frothy sputa, but less adhesive; few rhonchi on auscultation. Feels better, but still complains of throat. Temperature rose in evening to 100° ; up to this date very irregular.

7th, thirteenth day.—Morning temperature, 101.8° ; evening temperature, 102° ; pulse, 80; respirations, 20; skin hot; clean tongue.

13th, nineteenth day.—During last six days temperature vacillated between 100° and 102° , morning and evening, the evening rise followed by profuse perspirations; bowels still unaffected; tongue very slightly coated; abdomen tympanitic; had "nose bleed" on 10th, 11th, and 12th. Treatment up to this date "expectant." The throat was still complained of, but the lung symptoms had subsided. Inhalations stopped. At 4 a.m. passed a quantity of blood by stool, and again at 8 a.m.; the two filling half a "close stool," about three pints. Had a third hæmorrhage at 5 p.m. The loss of blood was followed by great thirst, weakness, rapid thready pulse, which rose to 130. Meteorism quickly increased; tongue clean; countenance blanched. Was kept perfectly quiet, in the recumbent position. Had from time to time small quantities of brandy to relieve the immediate symptoms of a dangerous collapse, and was given cold concentrated beef-tea, medicinally 3i. ethereal tincture of ergot, to be repeated if necessary, and every second hour gr. 6 of gallic acid, with $\frac{1}{4}$ grain of opium; had also an enema of gallic acid in cold solution of starch. The windows of the ward were thrown open. The immediate effect of the hæmorrhage was a fall of temperature from 102° to 99° , but a rise to 105° by 5 p.m. Tongue dry, skin warmer, abdomen tympanitic and barrel-shaped, left tonsil enlarged and painful.

14th, twentieth day.—Pulse stronger, 112; tongue clean and soft; hæmorrhage continuing, dark fluid blood passed in bedpan; abscess in left tonsil burst. Had ten grains of gallic acid early. Following draught to be given every second hour, commencing at noon:—*R.* Ol. terebinthinæ, 3ss.; spt. chloroformi, \mathfrak{m} x.; mucilaginis, aq. camphoræ, āā 3iv. *M. ft. haustus.* Chilled milk and lime-water; cold chicken soup substituted for beef-tea.

15th, twenty-first day.—Since yesterday took 3iv. of turpentine, which were retained without any unpleasant symptoms. Morning temperature, 102° ; evening temperature, 103° . Hæmorrhage arrested; abdomen much distended with flatus; appearance very characteristic; passed in bedpan a liquid, pea-soupy stool. Pulse, 130. Slept after 10 p.m. for some hours. Tongue clean and soft. Ordered a small turpentine enema. \mathfrak{m} x. extra of chloric ether and some tincture of cardamoms to draught of

yesterday. *Vespere*.—No hæmorrhage since morning, but passed a perfectly typical typhoid stool in bedpan.

16th, twenty-second day.—In last 24 hours five very characteristic pea-soupy stools. Slight symptoms of strangury. Has had \mathfrak{z} i. of turpentine by mouth and \mathfrak{z} i. by enema up to to-day. Draught to be taken every third instead of every second hour. Tongue clean, but dry; moistened with equal parts of fresh lime-juice, glycerine, and water. Complained of pain in chest; few dry rhonchi heard on auscultation; intellect confused; slightly delirious at night. Linseed and mustard poultice to chest. Spongiopiline wrung out of hot water and sprinkled with turpentine to be slipped under back of chest without moving patient. Takes his food better—milk, soup from two chickens, two oz. brandy, and one oz. extract of meat, with some soda-water, being very carefully nursed by Mr. Forrester, past hospital apprentice, his wife, and two special orderlies. Visited by myself and Surgeon-Major Latchford alternately.

17th, twenty-third day.—Morning temperature, 102° ; evening temperature, 102.4° ; pulse, 128. Six liquid pea-soup stools in 24 hours; urine turbid, passed partly in draw sheet while asleep; abdomen still much distended and barrel-shaped; tongue softer; no sordes as yet; breathing oppressed by pressure of distended intestines on diaphragm; front and sides of chest clear under percussion; not disturbed to examine lungs posteriorly; heart-sounds feeble; spat up a little blood. Taking 2 oz. brandy, 5 oz. port wine (which he prefers), milk, and three chickens made into a concentrated essence. Ordered \mathfrak{z} i. prepared chalk mixture with \mathfrak{m} xx. spt. chloroform every third hour. Turpentine stopped. Sinapisms to back of chest. *Vespere*.—Conscious. Takes his chicken soup. Wanders while sleeping; pulse, 140; spat up again a small quantity of blood. To have another chicken made into soup; turpentine stupe to abdomen; enema again to-night. Passing urine and stools involuntarily.

18th, twenty-fourth day.—Four stools; passed a quantity of turbid urine; tiring of his food; breathing oppressed from distension of abdomen with flatus. Ordered following draught every third hour:— \mathfrak{R} . Acidi hydrochlor. diluti, \mathfrak{m} xx.; tinct. card. co., spt. chloroform, $\bar{\mathfrak{a}}\bar{\mathfrak{a}}$ \mathfrak{m} xx.; tinct. capsici, \mathfrak{m} x.; infusi cinnamomi, \mathfrak{z} i. \mathfrak{M} . Had last night a pint of champagne; ordered another to-day. Very weak and low. *Vespere*.—Pulse, 120; tongue drier, but stools not quite so “pea-soupy.” Ordered brandy and egg mixture of Pharmacopœia. Some pain in back of chest; lying on right side; some dulness and signs of congestion at base of right lung.

19th, twenty-fifth day.—Morning and evening temperature, 102° ; pulse, 120; only two stools, containing traces of fæcal matter; slept a little during night; abdomen softer; ditto tongue; urine passed in draw sheet; requires frequent changing; spirit of camphor applied to sacrum;

losing flesh rapidly; abdomen stuped three times; turpentine stupe also applied to back of chest; mixture continued. *Vespere*.—Tongue dry, somewhat swollen; articulation difficult; three feculent stools passed in bedpan with urine; has been deaf for some days; senses dull; sleeping all day.

20th, twenty-sixth day.—Morning temperature fell two degrees to 100°; rose to 101° in evening; pulse, 120, weak; lying on right side; percussion note clearer; few dry rhonchi heard on auscultation. Takes his food, but not with relish; had yesterday two pints of champagne, four oz. brandy, one oz. ext. meat. Three stools in 24 hours; this morning decidedly feculent; asks for beer; lying rather low in bed.

21st, twenty-seventh day.—Morning temperature, 101°; evening temperature, 100°; pulse, 140, very weak and compressible; much exhausted. Tongue dry and hard; slept during night; was dozing this morning; few dry and sibilant rhonchi; a fluid, dark brown fæcal stool passed in bedpan; cannot reply distinctly to questions. Abdomen remains greatly distended and tympanitic, rather tender; legs drawn up. Large linseed poultice over chest and abdomen; ʒi. of brandy and egg mixture every hour. Following draught every second hour:—R. Tinct. cinchonæ co. ʒi., ætheris chlorici, ℥xx., ammoniæ carbonatis, gr. 10, sodii bicarbonatis, gr. 20, aquæ camphoræ, ʒi. in effervescence, with a spoonful of fresh lime-juice. 10 30 a.m.—Had a rigor, followed by cold perspiration. Cannot bear abdomen to be touched. *Vespere*.—Pulse, 120; meteorism increased. No urine passed since yesterday; drew off a quantity with a No. 3 catheter, which passed through three old strictures; tongue dry, and protruded partially, with difficulty; sordes on lips; had three fæcal stools after nutritive enema; lower limbs much wasted; sensible; takes his medicine and brandy; raw beef-juice to be substituted for extract of meat and beef-tea.

22nd, twenty-eighth day.—Pulse, 160; rapid, compressible, and with difficulty counted; eyes closed; can scarcely swallow, and then only on being roused; sordes on lips and tongue, which is dry, hard, and tremulous; subsultus; decubitus low in bed, and on the back. Status typhosus well marked. Abdomen greatly distended, glistening, and tympanitic. Taking raw beef-tea and brandy at intervals, which seems best retained of all food taken hitherto. All other nutriment discontinued. Introduced long tube, patient lying on left side, encircling abdomen with a sheet, and injected two pints of warm soap and water, containing ʒii. of turpentine. Some flatus and fæcal matter came away. Abdomen much softer. Immediately after threw up a nutritive enema, a pint of beef-tea and ʒi. brandy. Retained for an hour. Patient greatly relieved by these injections. To have ʒss. brandy in ʒi. warm beef-juice every hour. After injections pulse fell to 130, and the breathing was less oppressed. Patient having had no sleep thirty grains of potassium bromide were

administered. Following draught every second hour :—R. Bismuthi, gr. 10, acidi carbolic, granum, spt. chloroformi, ℥ xx., mucilaginis ℥ iv. M. Drew off a pint of high-coloured, and somewhat turbid urine. *Vespere*.—Temperature, 101°; pulse 136; respiration, 40. More sensible, asking what his temperature is? Urine still retained. Drew off a pint; again introduced long tube, and repeated same enemata as this morning; much flatus and liquid faecal matter came away. This was aided by gentle manipulation of abdomen. Ten grains of lacto-peptine added to draught. 9 p.m.—Long tube again introduced; much flatus passed, and abdomen became quite flaccid. Pint of beef-tea, ℥ i. brandy, and gr. 10 of quinine, thrown up. Abdomen bandaged with flannel roller.

24th, thirtieth day.—Morning temperature, 101°; evening temperature, 99°; falling steadily in a long drop; pulse, 112, firmer; 4 stools; passed 1½ pint of urine; looks better; speech more intelligible. Had xxv. minims of tinct. opii last evening in enema; slept better; respirations, 32; no delirium; thirsty. Ordered 2 oz. milk, 1 oz. lime-water, 2 oz. soda-water, as required. Taking in twenty-four hours 18 oz. of raw beef-juice, expressed from 3 lbs. of beef, ℥ iii. ext. meat, and 15 oz. brandy. Good deal of flatus passed. Abdomen softer, but still much distended, especially colon. *Vespere*.—Pulse, 112; tongue dry, but clammy; passed in bedpan a thin, dark brown, liquid faecal stool, intermixed with urine; usual injection of warm water, soap, and turpentine, through long tube, which passed a considerable way, followed by a nutritive enema of ½-pint warm beef-tea, ℥ i. brandy, gr. 10 of quinine, and ℥ xxv. of tincture of opium. Tiring of his milk diet but takes his extras well.

25th, thirty-first day.—Temperature fell steadily to 97°; pulse, 100; respirations 24, when sleeping; slept pretty well; two stools in twenty-four hours; tongue clammy, softer at tip and edges; towards base still covered with black sordes; much flatus coming away with the stools; still losing flesh; for some time on an air-bed. Asked for jelly; ordered 8 oz., also bismuth and carbolic mixture every third instead of every second hour. *Vespere*.—Temperature, 97°; skin cooler; perspiring; urine passed in bedpan of a lighter colour, but depositing much lithates. Treatment as before.

26th, thirty-second day.—Decidedly improved this morning. Temperature, 97°; pulse, 98; respiration, 24; tongue quite soft; abdomen much reduced in size, but colon distended and somewhat tender on pressure; passed a good deal of urine, which deposited lithates on cooling. Asks for bread and milk; to have a little milk, thickened with arrow-root; spongiopiline stupe to abdomen under flannel roller.

27th, thirty-third day.—Continues to convalesce. Temperature, 97°; pulse, 88; respirations tranquil, skin moist, feet rather cold, abdomen less tumid; passing much light-coloured urine; one ordinary liquid faecal stool.

Summary of Temperature, Pulse, &c.

Date	Day	M. T.	E. T.	Pulse	Stools	Diet	Remarks
1882		o	o				
Sept. 26	2	—	100	—	—	Milk	
" 27	3	99	102	—	—	"	
" 28	4	100	103	—	—	"	
" 29	5	100	101	—	—	"	Bronchial symptoms, with catarrh of soft palate and fauces.
" 30	6	99	100	—	—	"	Treatment symptomatic ; no stimulants.
Oct. 1	7	100	100·4	—	—	"	
" 2	8	100	102	—	—	"	Milk diet and lime-water.
" 3	9	100	100	—	—	"	A rose spot on abdomen on 9th.
" 4	10	98·4	101	—	—	"	
" 5	11	98·2	100	80	—	"	Evening exacerbations of temperature followed by profuse perspiration. "Nose-bleed" on 10th, 11th, and 12th.
" 6	12	99	102	96	—	"	
" 7	13	101·8	102	80	—	"	
" 8	14	100	102	—	—	"	
" 9	15	100	102	—	—	"	Milk diet and lime-water, a pint to two pints of concentrated soup added.
" 10	16	100	102	—	—	"	
" 11	17	100	102	—	—	"	A considerable hæmorrhage from bowel on 13th.
" 12	18	100	102	—	—	"	
" 13	19	100	102	130	5	"	For this gallic acid, turpentine, ergot, cold drinks.
" 14	20	99	105	112	5	"	
" 15	21	102	103	112	6	"	Very typical pea-soupy stools after the hæmorrhage ; much tympanites ; marked "status typhosus ;" retention of urine ; stools passed involuntary.
" 16	22	102·2	102·4	120	6	"	
" 17	23	102	102·4	120	4	"	Stimulants increased from 2 to 32 oz., and decreased to 7 with less urgent symptoms ; nutritive and stimulating enemata.
" 18	24	100·2	101	120	2	"	
" 19	25	102	102	130	2	"	
" 20	26	100	101	140	3	"	Bark, ammonia, turpentine, bismuth, soda, carbolic acid, local applications to abdomen. Respirations 44 to 32.
" 21	27	101	100	160	1	"	
" 22	28	99	101	120	1	"	
" 23	29	100·6	102	112	4	"	Stools thin and faecal, large flow of urine, with much lithic deposit.
" 24	30	101	99	100	7	"	
" 25	31	97	97	88	—	"	Rapid fall of temperature ; respirations, 24 ; pulse, 88 ; much loss of flesh.

November 2nd, thirty-eighth day.—Continues to convalesce slowly, but well. Temperature normal or sub-normal; pulse, 82; abdomen contracting; all distension of colon disappeared; no enlargement of spleen or liver; respiration fairly clear all over chest; measurement of abdomen 26 inches, against 36 inches at height of tympanitic distension; stools more solid, one or two daily; urine light coloured; very thin, but looking better; nutritive enema stopped for some days. Taking 10 grains of quinine in some warmed extract of meat, milk, calf's-foot jelly, port wine, arrowroot, also his bismuth and carbolic mixture, with occasional doses of lacto-peptine to aid digestion. From to-morrow to have a tablespoonful of cod-liver oil in warm milk, and xxx. minims of syrup of the iodide of iron twice a day.

6th, forty-second day.—Continues to make satisfactory progress.

Remarks.—A rather low and irregular range of temperature is by no means uncommon in some severe cases of Indian typhoid. In this interesting case the hæmorrhage was considerable, and the meteorismus the most distressing I have ever noticed, and the immediate relief following the introduction of O'Beirne's tube very marked. The nutritive enemata were well retained and of essential service. Stimulants were not commenced until serious symptoms made their appearance, were increased and decreased gradually, and administered at regular intervals, were well borne at the height of the status typhosus, and of decided benefit. The raw beef-juice was liked by the patient. The defervescence was rapid at the end, and there was no relapse. From first to last the patient was nursed with care, and to this was largely due his ultimate recovery.

THE S. D. GROSS PROFESSORSHIP OF PATHOLOGICAL ANATOMY.

AMERICAN surgery has had no better exponent than Samuel D. Gross; none so honoured abroad and at home by institutions of learning; none more revered by his associates and his pupils. His long and brilliant professorial career deserves the perpetuation of his name in close association with medical tuition. In furtherance of this object the Alumni Association of Jefferson Medical College has inaugurated a movement to secure, in some medical school, the endowment of a memorial professorship, to be designated the S. D. Gross Professorship of Pathological Anatomy. The profession at large, the personal friends of the late Professor Gross, and others interested in elevating the standard of medical education, are cordially invited to participate in this graceful recognition of conduct and services which have largely helped to establish the high standard of excellence to which surgery has attained throughout the United States, and served so much to dignify the repute of American medicine. Contributions may be sent to Dr. R. J. Dunglison, Treasurer, Lock Box 1274, Philadelphia P. O., and will be acknowledged in the columns of the *Medical News* of Philadelphia.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F. R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, July 12, 1884.

Towns	Population in 1884	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	351,014	843	663	116	150	-	-	19	4	12	19	6	117	24·6	2·2
Belfast, -	216,622	566	308	42	54	-	-	1	1	2	3	2	69	18·2	0·6
Cork, -	80,124	149	148	15	30	-	1	1	-	2	6	1	26	24·0	1·8
Limerick, -	38,562	77	89	11	27	-	-	-	3	-	2	3	12	30·0	2·7
Derry, -	29,162	67	53	6	13	-	-	7	-	1	2	1	5	23·6	4·9
Waterford, -	22,457	69	50	5	12	-	-	4	-	-	7	1	8	29·0	6·9
Galway, -	15,471	31	27	3	10	-	-	-	-	-	4	-	4	22·7	3·4
Newry, -	14,808	41	14	4	-	-	-	-	-	-	-	-	2	12·3	—

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 30·0 per 1,000 of the population annually in Limerick, 29·0 in Waterford, 24·6 in Dublin, 24·0 in Cork; the lowest rates are 12·3 in Newry, 18·2 in Belfast, 22·7 in Galway, and 23·6 in Derry. The rate of mortality from seven chief zymotics ranged from 6·9 per 1,000 per annum in Waterford, 4·9 in Derry, 3·4 in Galway, 2·7 in Limerick, 2·2 in Dublin, 1·8 in Cork, and 0·6 in Belfast, to *nil* in Newry. There is generally a perceptible increase in the general mortality and in that due to zymotic diseases.

The recorded deaths represent a rate per 1,000 of the population annually of 19·9 in twenty-eight large English towns (including London, in which the rate was 20·1), 22·0 in the sixteen chief towns of Ireland, 24·1 in Glasgow, and 17·4 in Edinburgh. If the deaths (numbering 22) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 23·8, while that of the portion of the district included

within the municipal boundary appears as 26·3. In London, and particularly in its northern and eastern districts, the serious epidemic of smallpox continues—the deaths were 185 against 155, 85, and 46, in the three preceding periods respectively.

Acute febrile zymotics were returned as the cause of death in 76 instances in the Dublin district, compared with 62, 84, 82, 71, and 72 in the five preceding periods of four weeks each, and a ten-years' average of 101·6 in the corresponding period. This group of maladies therefore showed a decidedly increased mortality, while they were by no means as fatal as usual. The 76 deaths included 19 from scarlet fever, 19 from "fever," 12 from whooping-cough, only 6 from diarrhoeal diseases, and no less than 4 from diphtheria. The epidemic of scarlet fever has again decreased slightly. Of the 19 fatal cases, 3 occurred in the Donnybrook (Pembroke Township) District, and 4 in that of Blackrock. Of the 19 deaths referred to "fever," 8 were ascribed to typhus, and 5 to enteric fever, while in no fewer than 6 instances the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were 5 more than those registered (14) in the previous period. Eleven children under five years succumbed to scarlet fever, among whom there was not one infant of less than twelve months. Of the 12 victims of whooping-cough 10 were under five years of age, including 5 infants of less than twelve months old.

Measles caused only one death in Cork, compared with 2, 0, 4, 3, 10, and 20 in the six preceding periods.

Scarlet fever was fatal in only one case in Belfast, the deaths being 5, 9, 9, 12, and 14 in the five previous periods. The deaths from this disease rose from 2 to 7 in Derry, and from 1 to 4 in Waterford. Diphtheria caused 3 deaths in Limerick. "Fever" showed a widespread prevalence and fatality. Diarrhoeal diseases were credited with only 14 deaths in the eight towns, against 26, 24, 32, 24, and 28 in the five previous periods of four weeks each. This low diarrhoeal mortality is of much importance in view of the approach of cholera, as it lessens the likelihood of any severe epidemic in Ireland. In London a rapid increase in the mortality from diarrhoeal diseases took place—the weekly registered deaths being 21, 39, 104, and 336 respectively.

In the Dublin Registration District 843 births and 663 deaths were registered, compared with 801 births and 603 deaths in the previous four weeks. The births were those of 424 boys and 419 girls. The deaths of infants under one year rose from 98 to 116; those of persons aged sixty years and upwards rose from 123 to 150.

The deaths referred to pulmonary consumption in the eight towns were 243, compared with 216, 244, 243, 212, 220, 189, 170, and 173 in the eight preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 92 deaths, against 108,

172, 155, 126, 157, 161, 185, and 165 in the eight preceding periods, and an average of 102·3 in the corresponding four weeks of the previous ten years. The 92 deaths included 47 from bronchitis (average = 66·3) and 26 from pneumonia (average = 19·5). An epidemic of croupous pneumonia, or of "pneumonic fever," may be said to have prevailed in Dublin during the past few months. Of the 47 persons who succumbed to bronchitis, 7 were infants under twelve months, whereas 18 had passed their sixtieth year.

On Saturday, July 12, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox or of measles, 18 cases of scarlet fever, 30 of typhus, 7 of enteric fever, and 11 of pneumonia.

The mean temperature of the four weeks was 61·1° in Dublin, 58·0° in Belfast, 59·9° at Roche's Point, Co. Cork, 59·6° at Glasgow, and 63·1° at Greenwich. The returns for Edinburgh are incomplete. The greater part of the period was warm, particularly in Dublin and at Greenwich. The maximal readings of the thermometer in the screen were 73·4° in Dublin, 71° at Belfast, 71° at Cork, 83·0° at Glasgow and 88·1° at Greenwich.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of June, 1884.*

Mean Height of Barometer,	-	-	-	30·084 inches.
Maximal Height of Barometer (on 14th, at 9 p.m.),				30·461 „
Minimal Height of Barometer (on 1st, at 9 p.m.),	-			29·541 „
Mean Dry-bulb Temperature,	-	-	-	57·8°.
Mean Wet-bulb Temperature,	-	-	-	53·4°.
Mean Dew-point Temperature,	-	-	-	49·4°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-			·357 inch.
Mean Humidity,	-	-	-	74·4 per cent.
Highest Temperature in Shade (on 13th),	-			75·4°.
Lowest Temperature in Shade (on 8th),	-			43·1°.
Lowest Temperature on Grass (Radiation) (on 1st),	-			39·0°.
Mean Amount of Cloud,	-	-	-	66·9 per cent.
Rainfall (on 10 days),	-	-	-	1·248 inches.
Greatest Daily Rainfall (on 3rd),	-	-	-	·551 inch.
General Direction of Wind,	-	-	-	N.W.

Remarks.

At first cold and showery, with prevalent N.W. winds, this month ultimately proved to be very fine, dry, and warm. The mean temperature deduced from the readings of the Dry-bulb thermometer taken at 9 a.m. and 9 p.m. was 57·8°, while that calculated by Kaemtz's formula from the daily readings of the maximal and minimal thermometers

was 56.6° —that is, exactly the average mean temperature, calculated in the same way, of the 20 years, 1865–84 inclusive. The rainfall (1.248 inches) fell short of the average for 20 years (1.961 inches) by .713 inch. There has not been so small a rainfall in June since 1877, when only .921 inch fell. On the other hand, 5.058 inches were registered in June, 1878. The rainy days were 10, compared with a 20 years' average of 14.7. In 1874 there were only 9 rainy days, in 1867 and 1868 only 6, and in 1865—the driest month of all—only 5. There was a heavy downpour on the evening of the 3rd (.551 inch), when some lightning occurred, as also on the 28th. Distant thunder was heard on the 30th. Hail fell on the 6th. No halos were observed—an evidence of the comparative infrequency of cirro-stratus cloud.

During the first week the weather was in an extremely broken, showery condition, and temperature remained throughout very low for the season, the mean being only 51.7° , or 4° below the average. In Dublin the only thoroughly fine day of the period was Whitsun Monday, the 2nd, which was fair and bright, but very cool in the shade. On the evening of the 3rd more than half an inch of rain fell locally, and the next two days were dull and cold, with some showers. During this time a depression was slowly travelling westward from the Baltic to Scotland. It caused heavy rain in the S.E. of England, with some thunder and lightning.

On the 10th the weather became warm and summer-like, and so continued until the 13th, when a sprinkle of rain fell, with a shift of wind to N. and a decided decrease of temperature. On the morning of this day a really unusual burst of heat occurred in Dublin. At 9 a.m. the thermometer stood at 71.2° , and in the course of the forenoon it rose still further to 75.4° , the highest reading of the month. The afternoon was cloudy, and the wind shifted to N., with light rain and such an abrupt fall of temperature that early next morning the thermometer sank to 43.9° , or 31.5° below the reading of a few hours previously.

Throughout the third week (15th–21st) quiet, fine, summer-like weather prevailed in Ireland, whereas in Great Britain conditions were less settled, and the northerly winds were stronger, and the weather cooler, and at times rather searching. An anticyclone lay constantly over Ireland, where pressure was so steady that in Dublin, for instance, the extreme range of the barometer from 9 p.m. of the 16th to 9 a.m. of the 21st—that is, 108 hours—was only .048 inch, or less than *one-twentieth* of an inch. On the morning of the 19th the greatest difference between the readings at any two stations in the United Kingdom was only one-tenth of an inch. Cool easterly sea breezes became very prevalent on the east coast of Ireland, while the general “set” of the wind was N.W. or N.

The record of the last week (22nd–28th) was again one of fine,

summer-like weather. In Leinster and the greater part of England this period was practically rainless until the evening of the 28th, when sultry showers fell in places copiously. On the 24th the wind rose to a strong breeze from W.S.W., and clouds of dust caused great inconvenience. Some lightning was seen on the night of the 28th, and distant thunder was heard on the afternoon of the 30th.

During the first half of 1884 (January to June, inclusive) the rainfall was 11·872 inches on 92 days. In the same period in 1883 the rainfall was 13·649 inches on 90 days.

ERRATA.—In the Abstract for the month of May, 1884, the mean temperature, deduced from the readings of the maximum and minimum thermometers by Kaemtz's formula, should be $51\cdot3^{\circ}$, instead of $50\cdot0^{\circ}$ —a value which is half a degree ($0\cdot5^{\circ}$) above the average mean temperature for May, calculated in the same way, for the 20 years, 1865–84 inclusive.

Also the Mean Humidity for May should be 75·8 per cent., and not 75·4 per cent. as printed.

PERISCOPE.

Edited by G. F. DUFFEY, M.D., F.K.Q.C.P.

PEROXIDE OF HYDROGEN AS A LOCAL THERAPEUTIC AGENT.

DR. A. H. PRINCE contributes a paper to the *St. Louis Medical and Surgical Journal*, March, 1884, upon the merits of peroxide of hydrogen as a cleansing agent in suppurating cavities which, he thinks, are not sufficiently appreciated by the medical public. It owes its importance as a therapeutic agent to its instability, being decomposed, in the presence of a variety of substances, into water and oxygen, and becoming at the same time a powerful oxidiser. A drop of pus possesses a remarkable power in decomposing peroxide of hydrogen, and liberating nascent oxygen which directly adheres to and attacks all the adjacent tissues for which it has an affinity, and it thus becomes a powerful bacterial destroyer. As an antiseptic it is inferior to iodoform, but it resembles it in producing little or no irritation when used about tender organs. Yet it is armed with a quality which gives it pre-eminence over all other antiseptics, and destines it to a position of prominence in the armamentarium antisepticum. The difficulty under which antiseptic medicaments have laboured has been the impossibility of successfully applying the agent in an unirritating form, so that it might come in contact with and destroy the diseased germs, and it is in surmounting this difficulty in the department of dentistry that this unique quality has been brought before our attention. Among the difficulties with which the dentist has been

obliged to contend, is the management of alveolar abscesses, situated, as they are, at the bottom of the alveolar cavity and accessible only through the root canal of the tooth. In peroxide of hydrogen the dentist has found an effective remedy, and its use in this connexion forms an excellent illustration of the properties of this agent. The septic abscess is caused to heal by one application made in the following manner:—After removing the pulp and passing a broach through the canal of the root into the abscess cavity, a drop of the liquid is injected by means of Farrar's syringe. The cavity of the crown is then immediately closed with softened gutta-percha, before which, under pressure of the finger, the liquid is driven into the abscess cavity. Upon coming into contact with the pus in the foetid cavity, the liberated gas permeates it throughout, and by the continued evolution of the gas the cavity is emptied of its contents, which boil out at the fistulous opening so thoroughly mixed that the appearance is that of foam or froth; while the remnant not thus removed is rendered so thoroughly antiseptic that the healing process proceeds uninterruptedly. Dr. Prince also gives the particulars of two cases illustrating the important place peroxide of hydrogen fills in ocular and in aural therapeutics. One was a case of severe gonorrhœal ophthalmia, and the other a case of mastoid abscess. In the first cold, as agreeable, was applied, and powdered iodoform was insufflated twice a day, and after each application a few drops of peroxide of hydrogen were injected between the lids with a pipette, and the lid quickly closed upon its withdrawal. In contact with the pus, the oxygen was immediately liberated in volumes sufficient to fill and distend the entire conjunctival sac, and presumably force the iodoform into, and the pus out of all the conjunctival folds and recesses, and effectually antagonise, for the time, the specific condition of the entire mucous tract. After each application, the matter was removed from the edges of the lid by absorbent cotton, a drop of a one per cent. solution of atropia applied, and the eye covered with a pledget of absorbent cotton soaked in a 25 per cent. aqueous dilution of laudanum, and changed according to the inclination of the patient. After each treatment there was a feeling of comfort and freedom from pain, and eventually final and complete recovery. The treatment adopted in the aural case was equally satisfactory.

THE FORMS OF PURPURA.

DR. HENRI LELOIR, in a recent paper on this subject, groups the pathogenic causes of purpura in the following manner:—(A) *Purpura from Modification of the Vessels*.—1. By disturbance of the capillary circulation, whatever may be the origin, causing active or passive hyperæmia, and producing, according to the case, hæmorrhage by diapedesis or by rupture of the vessels. Nervous purpura should be included in this group. 2. Telangiectasic purpura, or the purpura of Cornil. While the patho-

genesis of this form of purpura is not yet well determined, it nevertheless constitutes a special class by its pathological and clinical characters. In the case of Cornil and Frémont there was no extravasation of red globules, in spite of the existence of all the clinical characters of the petechiæ. 3. Purpura by primary alteration of the vascular walls, and consecutive rupture of these walls. (B) *Purpura by Modifications of the Blood*.—1. By too great fluidity of the blood. If the existence of this group was demonstrated there would be a purpura by diapedesis. 2. By vascular obstructions determined by certain elements contained in the blood, and causing the formation of thrombi or emboli. This purpura would be caused by simple diapedesis. It appears to be caused more often by vascular rupture; it is more often a hæmorrhagic infarction of the integument. *a.* By formation of clots in cases of blood dyscrasia. *b.* By emboli formed of white blood globules (leucocythæmia, &c.). *c.* By emboli formed by bacteria or micrococci (septic affections, &c.). *d.* By emboli formed by altered blood globules. (C) *Nervous Purpura*.—It is very probable that cases are sometimes observed which cannot be placed in any of the above-mentioned groups of purpura. Very often the origin of purpura (leaving aside certain forms of nervous or embolic purpura) seems to be complex. In a number of cases a detailed examination of observed phenomena shows that different pathogenic causes coexist, and it should never be forgotten that the pathogenesis of a case of purpura may be complex.—*Annales de Dermat. et de Syphil.*, Jan. 1884, and *American Jour. of the Medical Sciences*, April, 1884.

INFANT FEEDING IN ILLNESS.

THE following useful observations, by Dr. Keating, occur in the *Archives of Pediatrics*:—"If a child is so weak and exhausted that it will not digest the mildest form of prepared food, and it is impossible to obtain the breast, it is useless to weaken the condensed milk, or whatever we use, to such a degree as to make it absolutely valueless as a nutrient. The proper thing to do is to give some form of food which requires but little action of the digestive juices, or to prepare the food so that it is partially digested beforehand. I have used for some time, with great advantage, egg-albumen dissolved in water as a food for sick children when the stomach is intolerant of ordinary milk food. I have also observed that gum-arabic water will nourish for a surprisingly long time and allay irritability. Barley food would be valueless in a case of this kind, and pure cow's milk, diluted to resemble as closely as possible the mother's milk, would be regurgitated. In such cases the preparation of milk which has undergone partial digestion by the pancreatic ferment, in an alkaline condition, I have found most useful. The preparation is one which must be made with care, and according to the following directions:—Into a clean quart bottle put a powder of five grains of extractum

pancreatis, and fifteen grains of bicarbonate of soda, and a gill of water ; shake, and then add a pint of fresh milk. Place the bottle in a pitcher of hot water, or set it aside in a warm place for an hour or an hour and a half, to keep the milk warm, by which time the milk will have become well peptonised. When the contents of the bottle acquire a greyish-yellow colour, and slightly bitter taste, then the milk is thoroughly peptonised—that is, the casein of the milk has been digested into peptone. Great heat or cold will destroy this digestive action ; so, to prevent all further action when you think that digestion has proceeded far enough, at once place the bottle on ice, or into a vessel of boiling water long enough to scald the contents, and it may then be kept like ordinary milk. The mother should be warned to frequently taste the milk during its digestion, and as soon as the bitter taste is in the *least* apparent, the bottle should be placed on the ice for cooling, as in these cases it is sufficient to partially peptonise the milk. I mention these facts particularly as, strange to say, I have always failed with it in hospital practice, whereas in private I have had some excellent results, owing, I think, to the extra care in preparation. *Whey* is another admirable alternative in these cases. It may be made with wine, when there is great weakness ; but mothers do not often know how to make wine-whey. The proper method is, when the milk is boiling, to put in a wine-glassful of sherry, say, to the pint ; and if the curd does not separate, then add more wine until it does. As soon as you notice separation of the curd, add no more wine, but let the mixture boil for a time, until the whey and curd have become thoroughly separated—consuming about five minutes. This should be thoroughly strained. It has been recommended to use *lime-water* in the feeding of infants and young children. I am opposed to its indiscriminate use. I have seen children who could not tolerate even the weak preparation of the pharmacopœia. Undoubtedly at times it may arrest vomiting, as we all know, both in children and adult practice, but I much prefer, when it is necessary, to use an alkali—and if you use cow's milk raw for a young babe, it is always advisable to see that it is made alkaline—to do it with a small quantity of bicarbonate of soda. . . . I have one word of caution to give you in regard to the use of *sucking-bottles*. They are certainly useful as labour-saving machines in early infancy, and when thoroughly cleansed and carefully watched are no doubt indispensable ; but I have long come to the conclusion that if you can persuade the mother and nurse to take the time and feed the child that is old enough to manage by the cup or spoon, the word *colic* will seldom meet you in your practice. I am convinced that in institutions for foundlings, if it could be possible to discard the bottle, the percentage of deaths would be much diminished.”—*Med. Times*.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*On the Treatment of Pretubercular and of Advanced Phthisis Pulmonalis by the Mullein Plant.*^a By F. J. B. QUINLAN, M.D., Univ. Dubl.; Fellow of the King and Queen's College of Physicians of Ireland; and Member of the Royal Irish Academy.

IN the collection of ancient Irish manuscripts contained in the library of the Royal Irish Academy are several medical treatises in which the mullein plant is strongly recommended in pulmonary disease. In fact, the first word of its Celtic name^b [Cúineál Mhuirne] means "good for pulmonary complaints." From time immemorial the Irish peasantry have regarded this plant as an unfailing cure for consumption; and thus it is that an herb, which in England, France, and Germany is a mere wild weed, is in Ireland carefully cultivated on a very large scale. It is in constant demand, it is advertised in all the journals, and, in fact, forms an article of ordinary commerce. There are five mulleins, all belonging to the natural order of scrofularaceæ; but the one in question is the *Verbascum Thapsus*, or great mullein, which is known in France^c as the *molène bouillon blanc*, and in Germany^d as the *kleinblumiges Wollkraut*. It is a hardy biennial plant, with a strong stalk from half a metre to two metres high, with thick woolly and mucilaginous leaves, and a long flower spike with numerous yellow flowers, the smell of which is not

^a Read before the International Medical Congress, Copenhagen, on Tuesday, August 12, 1884.

^b Sowerby's *British Botany*. Volume VI. P. 111.

^c *Ibid.*

^d *Ibid.*

disagreeable. The best results are obtained with the green leaves, which can be procured during seven or eight months of the year; but excellent effects are produced by the dried leaves also. By cultivation under glass the mullein can be had fresh during the winter; and this is important, as will presently be seen.

The method employed by the Irish peasantry is to take one hundred grammes of the fresh green leaves (or about thirty of the dried) and place them in rather more than one litre of fresh cow-milk. This is brought to a boil, and allowed to stand for ten minutes. The hot fluid is then filtered, is slightly sweetened, and is drunk while warm. This whole quantity is taken twice or, in some cases, three times a day. It has a soothing pectoral effect, and, after a little time, is much liked by the patient.

Although in such popular repute, and in such extensive use, the mullein is not in the Pharmacopœia, nor was it regularly recognised by the medical profession. It appeared to me that it would be well that the matter should be properly investigated, and accordingly, during the last two years, I have treated a series of cases of pulmonary consumption in all its stages—127 in number—with the mullein leaf solely, with one trifling exception, which I shall presently notice. This procedure gave the most unbounded satisfaction to the patients, who implicitly believed in the remedy, and co-operated zealously with me in its use. Previous to commencing treatment each patient was carefully weighed, and this weighing was repeated every week, with great attention to uniformity of conditions as to time, clothing, meals, &c. The symptoms and physical signs of each patient were accurately noted, and the results tabulated. The conclusions to which I have arrived are as follows:—

1. In the early and pretubercular stage of pulmonary consumption mullein has a weight-increasing and curative power greater than that of cod-liver oil, and nearly equal to that of Russian koumiss. It has been experimentally proved that this is due to the mullein, inasmuch as the milk alone fails to accomplish the same results.

2. In cases in which tubercles are well established, or cavities exist, the mullein has a great power in relieving cough. In fact, such a patient taking it requires no cough mixture at all, and every practical physician will recognise the great boon which this power confers on the phthisical sufferers, whose stomachs are often hardly able to receive sufficient alimentary sustenance. Indeed, the mullein

milk is looked on by them more as a food than as a medicine. In persons of very feeble digestion heaviness is often experienced after so much milk. This, however, can be completely relieved by allowing the boiled mullein milk to cool down to 50° C., and adding a teaspoonful of Benger's pancreatic fluid. It should then be left under cover for ten minutes.

3. Phthisical diarrhoea is completely obviated by the mullein. This is, no doubt, aided by the milk, but also occurs when the mullein is prepared with water.

4. All the symptoms of pulmonary consumption can be combated by the mullein, except colliquative perspirations—over them mullein has no influence; and in my cases I principally employed the hypodermic injection of the atropia sulphate. This is the exception to the sole mullein treatment to which I have already alluded.

5. Mullein smoke applied directly to the respiratory passages has a great effect in relieving irritation, and spasmodic coughs, and coughs in general. The dried leaves of the mullein are broken up fine, and are smoked in an ordinary pipe, either pure or mixed with a little tobacco to flavour them. Wheeler and Whitaker, of High-street, Belfast (Ireland), prepare very elegant cigarettes for this purpose. These are of two kinds—(1) mullein, flavoured with a little Turkish tobacco; (2)—for those to whom tobacco is disagreeable—mullein, flavoured with a little oil of cascarilla.

I now exhibit both varieties of these cigarettes, as well as specimens of the mullein plant.

Koumiss can be had only where the mare is a regular milch animal; because, for chemical reasons, the milk of the cow does not make proper koumiss. Cod-liver oil is very disagreeable to take, and the quantity which is taken in all civilised countries, notwithstanding the wry faces generally made while taking it, by patients of all nationalities, is the surest testimony of its merit. It is, in my opinion, inferior to the mullein milk as a weight-increaser. It does not arrest cough, and it often does the contrary of arresting phthisical diarrhoea. Lastly, it disgusts the feeble stomach very much—to such an extent that many patients are entirely unable to take it. In the whole course of my experiments I met no patient who could not take the mullein, and scarcely any who disliked it.

I will conclude this paper with two typical cases of the cure of two patients who were suffering from early but undoubted pulmonary consumption. Both these patients are now alive, and in robust health, and I visited both just before leaving Dublin.

CASE I.—Helen S., aged twenty, single, a governess, residing in Dorset-street, Dublin, suffered 18 months previous to her admission into St. Vincent's Hospital from inflammation of the left lung. Her health fell away, she coughed, became emaciated, and the catamenia ceased. She had slight dulness over the apex of the left lung, and auscultatory phthisical signs. She weighed 110 English pounds. In five weeks she increased to 119 English pounds, all symptoms disappeared, and the catamenia returned during the treatment.

CASE II.—Elizabeth B., aged eighteen, single, a dressmaker, residing in Gloucester-street, Dublin, had been ailing for four months. She coughed, and once had slight hæmoptysis. She lost flesh, and the catamenia ceased. On admission into St. Vincent's Hospital I detected slight dulness over the right clavicle, and stethoscopic evidences of early consumption. She weighed 90·25 English pounds. Soon after beginning the mullein treatment the catamenia returned, and after six weeks of it she had increased to 102·75 English pounds, with evident recovery. She was now sent to our convalescent department in the country, when I directed her to get cod-liver oil, and to discontinue the mullein. For thirty-three days she took a tablespoonful of cod-liver oil twice and sometimes thrice daily, and increased 7·50 English pounds only. This was the more remarkable as, while taking the cod-liver oil, she had the aid of fresh air, sufficient exercise, and an abundant diet, of which she took ample advantage.

The above two cases are typical of about fifty instances of early consumption in which complete cures were effected. It is worthy of remark that very young mullein leaves have a dangerous resemblance to young foxglove—so much so that I have known an experienced gardener to put a young plant of the latter into a mullein bed. Of course, as soon as the poisonous intruder grew a little he was detected and expelled. Full or even half grown mullein and digitalis are not the least like each other. Dr. Ernest Knowling, of Tenby, South Wales, England, reported to me a case where belladonna leaves got accidentally mixed with mullein, and produced serious but happily not fatal results. I saw myself the leaves and flowers of the belladonna which had been picked out of that parcel, and they were further identified by Mr. Holmes, Botanist to the Pharmaceutical Society of Great Britain. We investigated this case, and found that the mistake arose from the highly reprehensive practice which prevails, even in some most respectable drug stores, of allowing dried poisonous leaves to be lying about in the same loft with non-poisonous ones. No person, however inexperienced, could

mistake fresh belladonna for fresh mullein; but when leaves are dried and curled up it requires an expert to distinguish many which, when green, are quite unlike. The above are the only troubles which have come to my knowledge connected with the use of a valuable remedy of which I solicit the consideration of this Congress. I feel that I lay myself open to much criticism in coming forward here to announce a specific even for early and pretubercular phthisis; for I am aware that many think but little either of cod-liver oil or koumiss.

The power of the mullein in soothing the downward path of the advanced sufferer is of lesser consequence; for, did it not exist, there are many other ways of accomplishing the same object. My only apology for the position I take is this—a high standard of ancient native culture perished in Ireland amid a sea of national woe; and, from my boyhood, I have seen the humbler classes of a whole nation cultivating, believing in, using, and paying for a remedy which elsewhere was, in modern times, regarded as a mere weed. It appeared to me that a whole nation using a remedy for centuries, and, no doubt, judging it by results, could not be wholly wrong. I approached the subject without any preconceived opinion, and had the result of my research been unfavourable, and the opposite of what it was, I had determined to announce it as such. All that I ask for this remedy from my esteemed colleagues here is to try it in a similar spirit, and I have no expectation of their taking any other course.

ART. VIII.—*Stone in the Female Bladder.** By GEORGE H. KIDD, M.D. Edinb.; M.A.O., *Honoris Causâ*, Dubl.; Fellow and ex-President Royal College of Surgeons, Ireland; Honorary Fellow, London and Edinburgh Obstetrical Societies; Corresponding Member of the Gynæcological Societies of Berlin and Boston; Consultant and ex-Master of the Coombe Lying-in Hospital; Consulting Obstetric Surgeon to the Hospitals of the House of Industry; President of the Obstetric Section of the Academy of Medicine in Ireland.

STONE in the bladder of women, though of rather infrequent occurrence, is met with sufficiently often to make it incumbent on the surgeon to sound the bladder in all cases where there may be

* Read in the Obstetrical Section of the Academy of Medicine in Ireland, February 22, 1884.

anything in the symptoms indicative of vesical trouble. No doubt the bladder is constantly affected sympathetically in cases of disease of the urethra, vagina, uterus, kidneys, and rectum, and their surrounding parts; but sounding the female bladder is easily done, occupies but a few seconds, causes little or no pain, and leaves no injurious results. If no stone be found, attention can then be directed more definitely to other organs; and if one be found, the true nature of the case is at once established. The ordinary uterine sound suits perfectly for exploring the female bladder. It can be used during a vaginal examination—the patient lying on the side, in the usual obstetric position—without creating any alarm, or indeed anything being said on the subject. In doubtful cases, where no stone is detected, and the symptoms still tend to the suspicion that there may be one present, it is well to place the patient on her back, and if the bladder be empty inject water into it, and again pass the sound, but this is rarely necessary.

Surgeon-Major W. P. Harris,* who, from having been in the Bengal Medical Service, has had very extended opportunities of seeing such cases, owing to the great prevalence of calculous disease among the natives of certain parts of India, states that “the proportion of women operated on is one to about twenty men.” The exact figures are not given, but I have no doubt the estimate is correct. I have myself seen a very considerable number of cases of stone in the female bladder, and in many of these the true nature of the case had not been discovered because the bladder had not been examined.

There are two methods of removing a stone from the female bladder—through the urethra, or through an opening made in the base of the bladder from the vagina. Many modern surgeons prefer the method by incision—Marion Sims and Emmet have both recommended it. The success that has in modern times attended operations for vesico-vaginal fistula has had much influence in deciding surgeons to adopt this method, along with the apprehension of incontinence of urine as a consequence of dilatation of the urethra. Two forms of lithotomy have been recommended—1st, through the vesico-vaginal septum; 2nd, through the urethra, laying it open for about $1\frac{1}{2}$ inches behind the meatus, and running the incision, if the size of the stone require it, into the bladder. The first is certainly the better of these operations. The sphincter should never be touched if it can by any possibility be avoided.

* On Lithotomy and Extraction of Stone.

Emmet specially recommends incision through the vesico-vaginal septum where there is chronic cystitis to any extent. In such cases he directs that the opening should not be closed after the stone has been extracted, but left to form a fistula, so as to leave the bladder at rest till the mucous membrane recovers its healthy condition. The success of the method of treating chronic cystitis by the establishment of a fistula lends much weight to this recommendation in aggravated cases of cystitis, but, as a rule, the lining membrane of the bladder gets into a healthy condition very rapidly after the stone has been removed, and the establishment of a fistula is very rarely necessary.

Dilatation of the urethra is the oldest method of removing calculi from the female bladder. It is objected to because of the risk of incontinence of urine, but as practised of late the risk of this is really very little. I have dilated the urethra very frequently, and am not at all sure that in any case permanent incontinence followed in consequence. In one case in which I dilated for excessive irritability of the bladder there has been some amount of incontinence, but it was—in the opinion of Dr. Swan, whose patient the lady was—due to spinal disease, and not to the operation. In one case, instead of incontinence, there was retention for several days, requiring the use of the catheter, though Dr. Robert M'Donnell and I each passed a finger into the bladder several times.

Professor Humphry, of Cambridge, has related in the *Lancet* for 1864 five very remarkable cases showing the freedom with which the urethra may be dilated so as to permit the extraction of very large calculi:—

Case 1, æt. 53—stone weighed 3ii. & gr. x.	Retention perfect, 5 hours.
„ 2, „ 3	„ 3ii. 3jss. „ 5 days.
„ 3, „ 4	„ 3iiiss. } Recovered quickly and
„ 4, „ 5	„ 3ii. } completely.
„ 5, „ 12	„ 3j. 3j. }

In this last case the stone measured in its smallest circumference 3 inches, and in its largest $4\frac{1}{2}$.

A still more remarkable case was related at the meeting of the British Medical Association in Cambridge by Mr. Bullon, of Ipswich, in which a stone weighing 7 oz. was extracted through the urethra of a girl aged fourteen. It broke down under the forceps, and was removed in pieces. The girl was able to retain water next day, and had no incontinence.

There are two methods of dilating the urethra—slow dilatation and rapid. Both have been combined with incision of the urethra from within outwards throughout its entire length, taking care not to go through the whole thickness of the canal. By some operators the orifice of the canal has been completely divided as a preliminary step. Various instruments have been devised for effecting the dilatation, such as Weiss', which consists of parallel bars that can be separated by a screw action after they have been introduced. This may be used for slow dilatation or rapid. It may be used day after day and the dilatation effected gradually, or it may be done at one sitting, as recommended by Mr. Bryant. The advantages of rapid dilatation are well shown by Mr. Bryant in his paper in the "*Medico-Chirurgical Transactions*." Of 28 cases he has tabulated, the dilatation was effected slowly in 13, in 4 of which incontinence followed, and in 15 it was effected rapidly, and in none of these was there incontinence.

Professor Humphry preferred the slow dilatation. I have already referred to the great success he obtained. He uses pieces of catgut bougie, introduced alongside of a silver catheter. Sponge tents have also been used. In a case we had in the Coombe Hospital many years ago Dr. Sawyer used parallel pieces of sea-tangle, and was able to remove a very large stone, but permanent incontinence ensued.

Sir Philip Crampton advocated rapid dilatation combined with incision, and invented an instrument for the purpose. Of the many plans of carrying out this mode of operation I believe his was the best. He believed the sphincter to arise from the arch of the pubes, and that the fibres pass down in parallel lines to the neck of the bladder, and there diverge from one another to surround it. His idea was to separate these fibres without dividing them, and the instrument he invented for this purpose consisted of two arms of hard wood, which, when closed, formed a somewhat conical dilator, and which could be opened by the action of a screw; the upper arm is grooved on its upper surface, and along this groove a blade can be inserted so as to cut towards the symphysis pubis, when it was pushed into the bladder.* I have used this instrument in a case of irritable bladder that I believed to depend on a fissure at the internal orifice, but without very satisfactory results—perhaps because it only separated the fibres and did not divide them.

* Dubois was first to recommend, and Callot to practise, the incision upwards.

All modern surgeons who operate by the urethra prefer rapid dilatation without incision. This may be done with Weiss' instrument or with the finger, the patient being under the influence of an anæsthetic. Weiss' instrument may be passed into the bladder and dilated rapidly, but the edges of the arms are liable, when expanded, to cut the mucous membrane.

To obviate this Mr. Bryant covers them with india-rubber, but dilatation with the finger, as recommended by Mr. Christopher Heath, has always appeared to me a safer and better operation. The patient, being brought under the influence of an anæsthetic, is placed in the lithotomy position, and the hands and feet tied together. Then, according to Mr. Heath, a director is passed into the bladder. I prefer a probe, believing the edges of a grooved director are liable to cut the mucous membrane. The finger is then gradually passed into the bladder by a semi-rotatory motion, the probe or director being used as a guide, so as to avoid making a false passage. A large-sized bougie may be passed first, then the little finger, and afterwards the index finger.

A few minutes will suffice to do this. The size and character of the stone may now be ascertained. If it be not very large, the lithotomy forceps may be passed in, the stone seized, and withdrawn, its position having been fixed by the finger, so that it could be seized in its shortest diameter. If the stone be too large, then it must be broken down, and for this purpose the crusher devised by Mr. Erichsen for breaking the stone after lithotomy in the male, or an instrument of that description, answers better than the lithotrite. It can be passed in the same way as the forceps, the position of the stone having been clearly ascertained by the finger, and the stone seized and broken. If necessary, a finger in the vagina will aid in the seizing of it. If the stone consist of the triple phosphates, as large stones usually do, it will break down with great ease. Whether a mulberry calculus could be broken in this way, I cannot say; but they are seldom so large as to require to be broken. After breaking the stone and removing all the fragments with the forceps and the finger, the bladder should be washed out, which may be done with an ordinary catheter and syringe.

The stone I exhibit was removed in the manner described on November 7th last, when I had the assistance of Sir George Porter, Dr. Poole, and Dr. F. W. Kidd. On the 9th the patient was able to retain water, and complete control over the bladder was soon obtained, and all vesical trouble disappeared.

After maceration for several days and repeated washing and drying, the fragments weighed rather more than one and a half ounces.

[Since this paper was read (Feb. 22), I again saw the patient (April 21st). She then complained of incontinence of urine while walking. On examination I found a small fistulous opening in the course of the urethra, which, however, caused so little inconvenience that she would not allow it to be closed. In another case on which I operated on July 16th, 1884, I used Hegar's dilators for the preliminary dilatation with very good effect.]

ART. IX.—*Comminuted Fracture of the Head of the Tibia.** By WILLIAM THOMSON, M.A., F.R.C.S.; Surgeon to the Richmond Surgical Hospital, Dublin.

AMONGST the fractures of the tibia which are met with in practice, the rarest class is that to which I must refer the specimen which I exhibit to the Pathological Section. In speaking of fractures into the knee-joint it is almost to be assumed that we refer to some very great external crushing violence which has been applied to that part, and has broken either the femur or the tibia, or both, into fragments at their junction one with the other. There is, however, another form of direct violence which may be not less destructive, but which does not receive much notice in the best and most recent surgical writings. I refer to that form of fracture of the head of the tibia which is produced *par écrasement*, or by crushing, the force being the weight of the trunk and upper extremities delivered through the condyles of the femur upon the articular surface of the tibia with such violence as to comminute it. To attain such a result in the way mentioned, it is of course necessary that the person should fall from a sufficient height upon the feet, thus allowing the following weight of the body to come with great force upon the tibial head, when further downward progress is suddenly stopped by contact of the foot with the ground. It is owing to such an accident that I am enabled to show this rare specimen, and to add a short record of it to the few cases which have so far been noted.

A patient was recently admitted under my care suffering from a compound fracture of the tibia, and the limb was at once dressed

* Read in the Pathological Section of the Academy of Medicine in Ireland, May 2, 1884.

antiseptically by Mr. Kennedy, the House Surgeon, and was placed on a double inclined plane. The patient, who was about sixteen stone weight, stated that he had been standing on a board, supported between two ladders, when it toppled, and he fell to the ground on his feet, afterwards striking with his left leg the iron frame of a bedstead which was close at hand. When I saw him next day I found the upper end of the lower fragment had pierced the skin at the junction of the upper and middle thirds of the leg. I slightly enlarged the wound, and returned the fragment; but, although there was some effusion into the joint, I did not then suspect fracture entering into it, and the House Surgeon, during his manipulations, did not detect any mischief there. Next morning, however, I thought I could detect some crepitation in the joint, although this was not the view of all who saw the limb. I am not allowed here to go into the question of treatment, and I may, therefore, simply say that the patient died about a week after his admission of blood poisoning.

At the *post mortem* examination, the soft parts were found infiltrated with blood. The knee-joint contained much blood and some pus. There was a fracture of the shaft of the tibia about the junction of the lower and middle thirds, and again about the junction of the upper and middle thirds. The middle third lay as a loose fragment, but its upper sharp end had evidently acted as a wedge, and had split the head of the tibia into two principal fragments, the chief dividing line passing just to the left of the spine. On examining the articular surface it will be seen that the left fragment comprises nearly the whole facet on that side, and is depressed about an eighth of an inch below the general surface. On the right side a line of fracture begins at the margin, about an inch from the central anterior point, passes obliquely backwards and to the left, passing behind the spine, and terminating at the antero-posterior fracture already referred to. This principal line is again intersected by one starting from the anterior central point at the margin and passing backwards and to the right posterior edge. To the left of the central line, and between it and the large fragment of the left facet, there is a considerable comminution, and the fragments number five. The principal lines of fracture which have been indicated, as seen on the articular surface, are continued downwards into the head of the bone, and they are to be seen on the left or inner aspect. They present there a series of three wedges, the first two being about an inch and a half in depth, and forming

a tolerably well-marked W. The third wedge occupies the posterior surface of the bone, and is about three inches in length, while its width at the upper or basal extremity is about an inch and a half. Another fracture passes from an inch below the tubercle upwards and backwards, terminating close to the articular facet for the fibula.

This fracture is one of special interest, both because of the mode in which it was produced, and because of its character. Very little attention indeed appears to have been directed to injuries of this part of the tibia. I have consulted many of the older writers, and all the recent editions of surgical works, without finding reference to it in other than the vaguest terms. Just when the specimen had come into my possession, I noticed in the *Dublin Journal of Medical Science* for April, 1884, a paper by Professor Gordon, of Belfast, on "Fractures of the Leg," and in it the following reference to the injury of which I speak:—

"1. *The Articular Fracture of the Upper End of the Tibia.*—The obliquity of the femur from without inwards and downwards, and the perpendicular position of the bones of the leg, cause the shock or impulse of the body, in leaping or falling from a height, to impinge chiefly upon the outer articular facet of the tibia; besides, the sharpness of the outer margin of the external condyle of the femur concentrates the force upon the outer part of the outer articular facet, and sometimes drives it into the cancellated tissue of the head of the tibia beneath it. There are three specimens of this accident in the Museum of the Queen's College. In two of them the tibia and fibula are also broken near their middle, presenting examples of the chisel-shaped fracture of both bones of the leg. In one of the two the compact tissue has been driven nearly half an inch into the cancelli of the head of the tibia. The appearance of the knee in this form of fracture would resemble, in a slight degree, genu valgum.

"The third specimen shows less depression than the other two, but equally well marked, and not complicated with any other fracture of either of the bones of the leg. I leave it to future observers to give us a more detailed account of this accident, which I believe to be not uncommon."

I at once wrote to Dr. Gordon, describing my specimen very briefly, and asking for some particulars of his. He was good enough to write to me the following letter:—

" 1 HOWARD-STREET, 29th April, 1884.

" DEAR SIR,—Since I received your letter I have carefully re-examined the three specimens of fracture of the outer articular facet of the upper end of the tibia.

" In the first, the compact tissue externally is driven into the cancellated tissue to the depth of almost half an inch, with a fracture of both bones a little below the middle. In the second, the impaction is about a third of an inch in depth, with also fracture of both bones at the junction of the lower with the two upper thirds. In the third, about two-thirds of the outer condyle have been broken off, with fracture of fibula through its neck; there is no impaction in this case.

" Now, I think that these specimens differ widely from that which you have, and I think that you will find that the fracturing cause has been direct violence from before backwards, whereas in these specimens the fracture has been the result of vertical force driving the outer sharp margin of the condyle of the femur into the cancellated tissue—a force which would not, from the obliquity of the femur, act on the inner tuberosity of the tibia. I think the oblique position of the femur and the vertical direction of the tibia exposes the outer tuberosity in a remarkable manner from vertical force, as in leaping from a great height, and I believe that in my specimens all point out to the fracture being caused in this manner.

" Believe me,

" Yours truly,

" ALEX. GORDON.

" Wm. Thomson, Esq."

You will observe that Dr. Gordon believes the injury in his cases to have been produced as it really was in mine, although, from some want of clearness on my part, he appears to think my case very different.

The subject has received much attention from M. Heydenreich, who chose the subject for his thesis at the University of Paris in 1879. He was fortunate to observe a case in the practice of M. Duplay, but when he came to search for other instances he found that surgical literature upon this class of injuries was poor indeed. The author of this very elaborate paper divides the fracture of the upper extremity of the tibia into four classes—I. Separation of the superior epiphysis. II. Tearing away of the anterior tuberosity of the tibia by contraction of the extensor tendon. III. Fracture of one of the condyles. IV. Fracture of the superior extremity of the tibia in its entirety.

Under the last head he makes four sub-divisions—1. Sub-condyloid fractures. 2. Comminution of the superior extremity. 3. Cuneiform fractures. 4. Vertical fractures.

The specimen which I submit combines the second and third of these varieties. It is greatly comminuted, and at the same time it presents at its left lateral aspect that cuneiform arrangement which Heydenreich describes. Referring to the second class he writes:—

“*Comminution of the Superior Extremity of the Tibia.*—There are cases in which the superior extremity of the tibia divided into a large number of fragments, impossible to describe, is literally shivered (*eclatée*). These fractures are in general accompanied by a certain degree of crushing (*écrasement*). The head of the tibia gains in thickness at the same time that it is comminuted.

“The Museum of Val de Grâce contains a specimen of this sort, placed there by M. Legouest, and taken from a patient who, in an attack of mania, jumped from the second floor. There is a fracture of the upper third of the thigh, a fracture of the external condyle of the femur, and a crushing of the os calcis. The fibula is broken at its upper part; and the head of the tibia, in reality crushed, is divided into numerous fragments by vertical and transverse fissures.

“The museum at Würzburg has an example of fracture of the head of the left tibia, in which the patient recovered. The articular surface is much comminuted, and the fragments are united by a porous callus.

“A specimen of the same kind is to be found in the museum at Brunswick. It is a comminuted fracture of the head of the right tibia. The articular surface, which is very irregular, is almost doubled, and in the neighbourhood the callus presents, in places, the appearance of stalactites. This specimen was procured from a man aged sixty-six, who died thirteen days after the accident.”

The cuneiform or wedge-form of the fragments, as indicated by the third sub-division, is very well shown in this specimen.

At the Pathological Society in 1879 Professor Bennett exhibited a similar specimen, which I show to-night through his kindness. It was then the only specimen known in Dublin. In describing it he said:—“In this specimen the lines of fracture, viewed in front, make, with the sloping margins of the tibial condyles, a letter W, the central wedge of which enters the joint and is capped as it were by the detached spine—the lateral wedges are depressed, so as clearly to indicate that the force which caused the fractures was a crushing force acting downwards through the femoral condyles. Viewed

from behind, the fracture is seen as an oblique fissure passing from above the fibular joint downwards and inwards to the base of the inner condyle. The surfaces of the cartilage, except in the lines of fracture, and of the cartilages of femur, are normal; they prove that the subject of this injury recovered without any serious inflammation or damage to the joint."

This specimen makes the tenth that has been recorded—but the injury, no doubt, occurs more frequently than we suppose.

ART. X.—*Does Reflex Paralysis Occur?** By C. J. NIXON, M.B., LL.D., Univ. Dubl.; F.K.Q.C.P.; Senior Physician to the Mater Misericordiæ Hospital, &c., &c.

It is sometimes advantageous to the progress of medical science to review the opinions held as to the nature of some obscure pathological process, and to analyse the evidence upon which conflicting views are based, so as to convert an hypothesis into a true theory of disease. This latter is, in medicine, a task beset with difficulties, as notwithstanding the desire which each observer may have to attain the truth, still in many cases the influence of bias interferes in the collection, or appreciation of the value, of facts opposed to an immaturely-formed opinion; hence the diametrically opposite views held as to the cause of the phenomena of disease. Error often arises from the fallacy, as Coleridge points out, of "accumulating the one sort of facts and never collecting the other; thus we do, as poets in their diction, and quacks of all denominations do in their reasonings, put a part for a whole." It is an obstacle to the advancement of our science that in support of any hypothesis as to the nature of an obscure disease, a rich mine of records of a perplexing and conflicting nature is within one's reach to sustain any particular view that may be entertained, so that there exists the opportunity of selecting evidence which, thoroughly sifted, is often valueless. We have had within the past few years the example of an illustrious physician levelling the monumental work of a lifetime, by deduction from evidence obtained from the indiscriminate records of cases published in the various medical journals, and valued as if they represented the acumen, the accuracy of detail, and the power of thought possessed in the highest degree by the commentator himself. Do we not in many medical researches

* Read before the Medical Section of the Academy of Medicine in Ireland, Friday, May 16, 1884.

realise how apt is the old saying, "There is nothing true that is not possibly false, and there is nothing too absurd to be true."

The subject of the reflex origin of paralysis may, I think, be discussed most satisfactorily by examining the evidence in support of this theory, that against it, and, lastly, by studying the nature of certain pathological processes which may serve to explain the occurrence of paralysis following peripheral lesions of several kinds.

Since the time that Marshall Hall established the reflex function of the cord, attempts were not wanting to connect various peripheral lesions with paralysis by reflex agency. A peripheral irritation could cause a localised spasm or general convulsions—why could it not also cause paralysis? Marshall Hall himself gave the initiative in this direction, for he records in his work on the Nervous System the case of a child with paralysis of the arm following the irritation of teething. Then follows quite a flood of cases connecting disease of almost every part of the body with a reflex disturbance of the motor functions of the spinal cord, so that we have some justification for the statement of Brown-Séquard,^a that "the number of cases of reflex paralysis published in the medical journals and in many works is so considerable that it would be easy to give cases of paralysis or anæsthesia of the various parts of the body, showing that the exciting cause may start from any sensitive nerve, and especially from its termination in a mucous membrane or in the skin." However, if we follow in order the conditions which would seem to justify this statement we find that they may be classified under two heads—first, the evidence obtained from recorded cases of disease; second, that deduced from experimental research.

The class of cases of disease supposed to be specially influential in giving rise to reflex paralysis, taking them apart for the moment from the study of reflex paraplegia, are—

- (a.) Amaurosis following affections of the fifth nerve.
- (b.) Paralysis of the orbital nerves, especially the third, following severe neuralgia of the fifth.
- (c.) Paralysis of the third nerve, following injury of the supra- or infra-orbital nerves.
- (d.) Amaurosis following irritation in the dental nerves.^b
- (e.) Paralysis following wounds, as in the cases recorded by Weir Mitchell and Bidon.^c

^a Brown-Séquard. Paralysis of the Lower Extremities. P. 10.

^b Ophthalmic Reports. Vol. IV. Hutchinson.

^c Paralyse par Irritation Périphérique. Revue de Médecine. Avril, 1884.

I do not think it necessary to take into consideration here the cases of paralysis following acute diseases recorded by Leroy d'Etiolles,^a as I think an impartial observer will regard these cases as due either to muscular exhaustion or inflammation of the large nerve sheaths; nor is it of importance to dwell upon the extremely rare instances mentioned of paralysis of the auditory nerve from neuralgia, or on the numbness which is stated to follow anæsthesia of the acoustic nerve.

Taking the tabulated cases in order, we find that the following observations have been made:—

(a.)—Notta records several cases where congestion of the eye and photophobia followed severe neuralgia of the fifth nerve, and two cases where amaurosis followed or accompanied trifacial neuralgia.

(b.)—Maréchal de Calvi reports four cases where paralysis of the third nerve, principally implicating the branch supplying the levator palpebræ, followed severe prosopalgia.

(c.)—A number of writers report cases of ptosis following injury of the supra-orbital nerve.

(d.)—Mr. Hutchinson, in the fourth and fifth volumes of the "Ophthalmic Hospital Reports," gives details of cases of apparent reflex disturbance of the nutrition of the eyeball, or of the centre of vision, following persistent irritation of a distant branch of the fifth nerve such as that caused by toothache.

(e.)—The cases of paralysis following wounds recorded by Keen, Weir Mitchell, Morehouse,^b Schwahn, and Bidon.^c

From *à priori* considerations it would not be a matter of surprise to find affections of the eye and of the optic nerve closely related to those of the fifth nerve. The anatomical history of both nerves shows that they are very closely associated. M. Serres held that in the mole the optic nerve was altogether wanting, its place being taken by a branch of the fifth nerve; whilst Carus maintained that in this animal there is an optic nerve as large as a human hair which joins with an optic branch of the fifth nerve, and that both form the retina. In the proteus anguinus the fifth nerve takes the place of the optic, and the animal owes, it is said, whatever vision it possesses to this nerve. Nor must we lose sight of the various functions of the fifth nerve in relation to the eye, as is shown by the disorder of secretion and neuro-paralytic phenomena which

^a Des Paralyses des Membres Inferieurs ou Paraplegia. Paris, 1856-57.

^b Gun-shot Wounds and other Injuries of Nerves. Philadelphia, 1864.

^c Deutsche militärärzt. Zeitschrift, 1876.

sometimes arise when the nerve is the seat of the disease. Further, we must not overlook the direct communications existing between the optic nerve, the third, fourth, and sixth nerves, and the fifth nerve. Thus Rosenthal points out that the ophthalmic division of the fifth gives off branches which join the third, fourth, and sixth nerves as they enter the orbit; whilst Hirzel describes branches as ascending from the spheno-palatine ganglion to join the optic nerve. I desire especially to dwell on this point, as it may serve to explain the conduction of irritation directly from the fifth nerve to the orbital nerves, or from the dental nerves to the optic nerve, if the cases recorded by so distinguished an observer as Mr. Hutchinson be not coincidences of two distinct diseases. But, apart from all *à priori* considerations, an examination of the cases of neuralgia associated with amaurosis leaves us in complete doubt as to the existence or non-existence of an independent lesion of the optic nerves. The cases recorded are for the most part of a very grave character, and there is no reason for assuming that the optic nerves were not themselves directly implicated. We see hundreds of cases of facial neuralgia. In how many do we find amaurosis associated with it?

Again, in explanation of the cases recorded by Maréchal de Calvi of paralysis of the third nerve following or accompanying prosopalgia, it is, I think, sufficient to refer to the observations of Wecker* as to the ætiology of paralysis of the third nerve. It is, according to this distinguished ophthalmologist, most frequently associated with the rheumatic diathesis, and often arises from passing suddenly from a very warm into a very cold atmosphere. If a patient can get facial neuralgia from the influence of cold, and that his third nerve may be paralysed from the same cause, there is no reason why in a certain proportion of cases both nerves may not be simultaneously affected by the same disturbing element, so that what may appear to be associated as cause and effect are in reality coincident and independent. Paralytic lesions of the third nerve and amaurosis following injuries of the frontal nerve or its branches are commonly instanced as examples of reflex paralysis. Walther denies that there is a single fact proving that amaurosis is due to an injury of the frontal nerve, whilst Müller and Sichel state that the amaurosis is due to commotion of the eye and optic nerve following a blow on the forehead. Some interesting observations that apply in some respects to paralysis of the third nerve from injury have

* *Traité Pratique des Maladies des Yeux. Tome II. Wecker. Deuxième édition.*

been made by Hölder. In 124 cases of injuries to the skull there were 79 fractures of the roof of the orbit; in 86 fractures of the base of the skull there were 53 fractures of the canalis opticus, and in 42 out of those 53 cases there was hæmorrhage into the optic sheath. These examples are sufficient to show that a severe injury affecting the branches of the frontal nerve may be attended with such lesions as readily account for the implication of other nerves within the orbit. I may further add, in dealing with this question of paralytic lesions following irritation or injury of the fifth nerve, that some years ago a series of experimental observations were made on rabbits by Dr. C. E. FitzGerald and the late Dr. Harvey, and in no single instance was either of these observers able to produce a paralysis of any of the orbital muscles or amaurosis from irritation or injury of any branch of the fifth nerve.

With regard to the occurrence of paralysis following wounds, I may adopt the distinction made in those cases by Bidon—viz., the cases in which the paralytic phenomena occur immediately after the infliction of a wound, and those in which the paralysis supervenes at a late period after the injury. In the latter there can be very little doubt of the paralysis being produced by an ascending neuritis. In the former, however, the explanation of the mode of production of the paralysis is by no means clear. Brown-Séquard's theory of a reflex action cannot explain the occurrence of paralysis of the right arm following a wound of the right leg; nor are the hypotheses of Weir Mitchell or Jaccoud of a more satisfactory nature.* I am more disposed to accept Vulpian's^b view of the nature of these cases in attributing the paralysis, not to the wound inflicted, but to a shock or injury experienced at the same time, which was carried, it may be, to the spinal cord, or perhaps along the course of the nerves of the paralysed region.

But it is chiefly in the study of certain forms of paraplegia that we find the evidence most relied on for the proof of the existence of reflex paralysis. I need not dwell on the cases of reflex paraplegia recorded by Graves and Rayer, nor on the observations of Stokes on this form of paralysis. We may, I think, date its special introduction into the nosology of nervous disease from Mr. Stanley's reports of cases of paraplegia resulting from disease of the bladder and kidneys, which appear in the "*Medico-Chirurgical Transactions*" for 1833, and in which it is stated that in all instances the

* See Bidon ; loc. cit.

^b Vulpian ; *Leçons sur l'appareil vaso-moteur*.

cord was perfectly normal with the exception of *moderate hyperæmia*. It is not, perhaps, going too far to say that the absence of any microscopic examination of the spinal cord in these recorded cases renders them utterly valueless in the determination of the question as to whether or not paraplegia can be produced without the existence of a central lesion.

The view, however, that paraplegia could be produced from reflex disturbance obtained an influential support from Hensch, and at first from Romberg, though in the last edition of his celebrated handbook the latter unhesitatingly admitted the erroneousness of the theory. Moreover, an experiment of Comhaire, made in 1840, seemed to afford a physiological proof of how this form of paralysis could be produced. Comhaire found after removal of the kidney in a dog a distinct weakness of the leg on the side operated on. With reference to this experimental observation I may here mention that Lewisson repeated it in twelve instances without producing any signs of paralysis, so that probably in Comhaire's case the weakness in the limbs may be fairly attributed to an extensive division of the lumbar muscles.

It would be out of place here to deal at any length with Brown-Séquard's well-known views as to the occurrence of reflex paraplegia, the affections with which it is associated, its characteristic features, and the mode by which it is brought about. They are too well known to need recital. It seems to me strikingly singular that if reflex paraplegia is of such frequent occurrence as the observations of this distinguished physiologist seem to imply, cases corresponding to it in details should be so seldom met with in hospital practice. I have had the advantage of being connected with a large hospital for some fourteen years, but I have not met with a single instance of paraplegia that I could say was reflex in its nature, or that presented the train of symptoms said to distinguish this special form of paralysis. There are two points in reference to Brown-Séquard's views to which I may advert:—First, that the paralysis is brought about by the peripheral irritation, usually a urinary one, producing a reflex contraction of the vessels of the spinal cord; there is a starved supply of blood to the nerve centre, hence paralytic weakness. Brown-Séquard saw a prolonged contraction of the blood-vessels of the spinal cord of a rabbit follow the application of a tightened ligature to the hilum of the kidney, and, further, it was noticed that the contraction of the vessels was greater corresponding to the side operated on. The second point

to which I direct attention is that, according to Brown-Séguard, this form of paralysis is met with where there was most irritation and least inflammatory disturbance.

This opinion as to the reflex origin of paraplegia received decided opposition from Sir William Gull, Hasse, and Valentiner. I am not aware of any noteworthy authority who accepts it except Hammond, whose views with regard to anæmia of the anterior and posterior columns of the spinal cord may, I think, be regarded as completely wanting in proof. Sir William Gull repeated the experiments of Brown-Séguard in ligaturing the hilum of the kidney, but failed to see any contraction of the vessels of the cord following the operation, whilst he alludes to the difficulty which exists in distinguishing the small vessels of the cord on laying open the spinal canal independently of any source of irritation, the columns of the cord appearing white and glistening, not more vascular than tendons, and no vessels being observable except small veins. This observer reported a number of cases of paraplegia occurring in the course of genito-urinary disease, where there was inflammation in the urinary passages of a *suppurative* character, and in which, on *post mortem* examination, distinct evidence of myelitis were found, sometimes due to extension of inflammation along the nerves to the cord, in other instances from extension of phlebitis from the veins of the bladder to those of the cord.

This view is supported by the record of a case, full of interest, which appears in Vol. XVII. of the "Medico-Chirurgical Review." The writer, Dr. Hamilton, mentions that a shipwright, aged forty-seven, was admitted into hospital under his care, suffering from cystitis, accompanied by retention of urine. There was subsequently extension of inflammation to the pelves of the kidneys, the man became completely paraplegic, and finally died, after some weeks, in a condition of coma. The *post mortem* examination revealed a gangrenous condition of the bladder, purulent infiltration of the kidneys, thrombosis of the arteries of the spinal cord, with apoplectic extravasations into its substance, and areas of softening in the grey matter. The myelitis extended through a considerable portion of the cord. In this case an extension of phlebitis along the lumbar and sacral veins led to the disease in the cord, with its attendant results.

The cases recorded by Gull and Hamilton were so far interesting, as they bore out a conjecture of Troja, made in 1780—viz., that complete paralysis of the lower limbs might arise in renal disease

from extension of inflammation from the kidney to the spinal cord.

We have, then, two distinct views enunciated—that of Brown-Séquard, that urinary paraplegia is unassociated with any disease of the spinal cord, but due merely to a spasm of its blood-vessels, causing anæmia; whilst the direct opponents of this view—Hasse, Valentiner, and Gull—maintain that urinary paraplegia represents a form of myelitis.

Now, quite apart from the discrepancy of opinion which exists as to the state of the blood-vessels of the cord following ligation of the hilum of the kidney, two main objections may be raised to the reflex theory of Brown-Séquard:—Firstly, we must, if we accept this view of the cause of urinary paraplegia, admit the existence of a prolonged spasm of the blood-vessels of the spinal cord, which is contrary to what we know obtains generally with regard to spasmodic phenomena. Spasm lasts but for a short period, when it gives way to relaxation, so that the condition of the spinal cord would ultimately be one of congestion instead of anæmia. The theory of spasm implies fatigue and exhaustion, whether applied to involuntary or voluntary muscle. The muscles of the outstretched arm of an athlete when grasping a weight will after a time commence to quiver, and the limb will finally drop to his side. There is no reason to think that a similar exhaustion should not seize on the muscular fibres of the arterioles of the cord. Secondly, we may fairly ask, why is it, if this spasm be brought about by peripheral irritation in the way mentioned, that we do not meet it in all cases where there is peripheral irritation—in cases, for instance, of contracting kidney, in vesical or renal calculus, in tumours of the bladder, &c.? We might go further and ask, if paraplegia be brought about in this way from disease of the genito-urinary tract, why have not cases of paralysis been frequently met with in affections of the stomach, the liver, the lungs, or other organs, which have as close a relation to the vaso-motor system as the bladder or urethra? I think, no matter how high may be our respect for the author of this hypothesis, the objections raised against it are fatal to it.

It is well, however, to allude to some points which apparently afford support to the reflex theory of paralysis.

In 1869, Lewisson, whilst showing that Comhaire was wrong in his statement as to the occurrence of paraplegia following extirpation of the kidney, found that, having exposed the uterus, kidneys, and intestines of a rabbit, if he pressed any of these organs more or less

strongly between the fingers, a complete paralysis of the lower extremities with loss of reflex excitability was produced, and that it continued as long as the pressure was maintained, and even for a short time afterwards. The constriction of a loop of intestine was followed by the same result. In the cases of paraplegia induced in this way no lesion was found in the spinal cords of the animals operated on, death usually resulting from peritonitis. Furthermore, the discovery of the action of the pneumogastric, splanchnic, and superior laryngeal nerves in inhibiting the action of other nerves, gave some plausible grounds for regarding the processes of reflex paralysis and reflex inhibition as similar.

Before, however, taking into consideration this function of inhibition, let us ascertain the conditions which are known to interfere with the function of the motor cells in the spinal cord. These conditions seem to me to be as follows:—

Destruction or functional incapacity of the central motor apparatus.

Structural disease of the cord implicating its motor area.

Functional incapacity of its motor cells, owing to the action of certain poisons.

Functional incapacity of its motor cells, owing to an exhaustion which interferes for a time with their excitability and conductivity.

It is only necessary to advert briefly to the two last mentioned conditions. It is uncertain as to the precise way in which certain poisons, especially the vegetable alkaloids and kindred substances, such as woorara, ergotine, nicotine, hydrocyanic acid, and camphor, act in producing paralysis. It is probable that they excite great alterations in the blood, and produce in this way a sudden trophic disturbance in areas of the motor apparatus, probably in the muscles themselves.

Paralysis from exhaustion of the nerve cells is a condition involved in much obscurity, and it is one which has only theoretical grounds for its existence. It is, probably, the form of paralysis met with after inordinate muscular exertion, or other conditions which overtax the activity of the motor cells in the cord—as, for instance, a severe convulsive seizure. There is, of course, some difficulty in distinguishing the loss of power which results from exhaustion of the motor cells from that due to fatigue in the muscles. But there is no reason to assume that the cells in the spinal cord would not have their function interfered with by over-work, just as muscles may become temporarily inactive from fatigue, or as the ganglia of the

heart become exhausted from over-stimulation. Admitting the four conditions mentioned as serving ordinarily to account for the occurrence of paralysis, it remains to be discussed as to what influence inhibition may also play in producing it. A great deal of doubt and obscurity is involved in the study of the phenomena of inhibition. Thus it is argued that those actions which we attribute ordinarily to the influence of the will are instances of inhibition. The power of restraint which distinguishes the man from the child, which arrests the outward manifestations of grief, which keeps the Indian unmoved at the stake, and which forms an important and necessary attribute of the man of the world, is, we are told, an expression of inhibition. It is possible to maintain an unmoved countenance whilst listening to a good joke, and within a certain limit the ordinary movements of laughter can be prevented, but with many persons this power of restraint is overcome, and the effort to be passive ends in an explosion of mirth. In other words, inhibition is too weak, and we become the subject of reflex movements which are beyond our control. But if we pass from this speculative consideration of the influence of inhibition in relation to phenomena which we usually attribute to the action of the will, we find that there is some evidence, however unsatisfactory, that muscular movements are interfered with by agencies which are in operation within the lower nerve centres. Thus Setschenow demonstrates that in certain animals stimulation of the optic lobes leads to a considerable delay between the application of a stimulus and the commencement of the resulting reflex action. Further and more interesting in relation to the present inquiry are some experiments of Herzen, Goltz, and Nothnagel, which apparently indicate the existence of an inhibitory mechanism in the spinal cord itself, which is influenced by powerful impressions made on the peripheral sensory nerves. Herzen, having removed the encephalon of a frog, irritated the lower part of the spinal cord by a caustic application. During the time that the irritation was applied, the reflex acts were diminished to a remarkable extent in the upper extremities. He further found that in a frog, the brain and cord of which had been destroyed to a level with the brachial plexus, if the sciatic nerve on one side were irritated, say by the passage of an electric current through it, so long as the current was passing the reflex movements were lost in the opposite leg. This corresponds closely with an experiment made by Nothnagel on a brainless frog, and which was attended by a similar result. Goltz, too, shows that the reflex croaking ceases to

take place on striking the side of a brainless frog, if, at the same time, its skin be powerfully stimulated at any point.

These experiments are interesting as they are in accord; and they, no doubt, seem to point to the existence of some inhibitory mechanism in the spinal cord which, under certain conditions, interferes with its reflex activity. It may indeed be questioned as to how far the influence of shock, or diversion of nervous energy into other channels, may act independently of any inhibitory mechanism in this arrest of function, just as we find that a sharp blow given to a magnet may destroy for a time its special properties. There are a number of instances familiar to us all which occur to me that may be adduced in favour of this view. A sudden fright or intense concentration of thought will often arrest hiccough; expectancy will prevent sneezing after snuff-taking in those unused to this luxury. It is said that the Indian ordeal of making those accused of theft chew rice, and then spit it out, results, in the case of the innocent, in its being reduced to a fine pulp, but in the guilty there is an arrested secretion of saliva, and it is spat out as a dry powder. The effect of terror in paralysing motion and sense is well known to us all. When Æneas beholds the shade of Creüsa, he is seized with panic, he is motionless, and the fountain of speech is for the moment dried up—

“Obstupui, steteruntque comæ, et vox faucibus hæsit.”

A kick on the shin received during a football match is often unheeded, though if administered at another time and place it gives rise to the most intense pain, and to an energy that is disposed to show itself in a certain definite way.

Mental pre-occupation often dulls the senses to things that are passing on around us:—“How often,” Locke tells us, “may a man observe in himself that whilst his mind is intently employed in the contemplation of some objects, and curiously surveying some ideas that are there, it takes no notice of impressions of sounding bodies made upon the organ of hearing with the same alteration that uses to be for the producing the idea of sound.”

All these appear to me to be instances where nervous energy has passed into definite channels, so as to exhaust the activity of other areas or channels for limited periods of time. This would, no doubt, be a very simple way of accounting for the phenomenon of inhibition, though I am quite aware it does not afford a complete solution of the problem. It is, however, the explanation I would offer of the results of the experiments of Lewisson, regarding

which I would say that it is difficult to recognise the identity in action of an inflamed or irritable bladder producing paraplegia and the extremely grave lesions by which this observer effected the same result.

Returning, however, to the part which inhibition may be said to play in producing reflex paralysis, we have first to follow the effect of the afferent stimulus conveyed to the spinal cord. This stimulus passes to the motor cells, it produces spasm in a definite area corresponding to the segment of the cord that receives the irritation, and if this be a grave irritation, or if there be an exaltation in the excitability of the cord as in tetanus, there is an irradiation of the stimulus to neighbouring motor cells, and more or less general muscular movements are produced.

Now, theoretically, the only influence, excluding that of the will, which can interfere with the effect of this stimulus on the motor cells in the cord, assuming that it is unaltered in structure, is that of inhibition. In other words, the peripheral irritation to prevent the activity of the motor cells must do so by the agency of the inhibitory mechanism abiding in the spinal cord itself; so that if reflex paralysis have any meaning at all, it is a paralysis by inhibition, or we may term it shortly, if we believe in its existence, inhibitory paralysis. In a few words more I propose showing that as yet there is no necessity for the admission of this physiological basis of a lesion of function in the cord.

The cases recorded by Sir William Gull and by Dr. Hamilton show that myelitis, followed by paraplegia, may be set up in disease of the urinary organs from the propagation of inflammation *per continuo* from the primary seat of disturbance to the spinal cord; in some cases the inflammatory action extending along the nerves to the cord, in other instances along the veins. This view is fully substantiated by the important observations of Leyden, who shows that an ascending neuritis may, by involving the spinal cord, give rise to paraplegia. This result is associated with the following conditions, so far as we yet know:—

(a.) Diseases of the urinary organs.

(b.) Dysentery.

(c.) Certain affections of the uterus.

Whether or not it is necessary for the development of myelitis in those cases that there should be a continuous extension of inflammation along the nerve trunks to the cord is a question still *sub judice*. The experiments of Tiesler, Feinberg, and Hayem are

important as bearing upon this point. All these observers found that, as a result of the application of different irritants to the sciatic nerves of various animals, paraplegia was induced. A primary purulent focus was found at the site of irritation of the nerve, and another purulent focus at its origin from the spinal cord, which in this situation was softened and infiltrated with granular bodies. The portion of the nerve intervening between the foci of purulent infiltration was, however, perfectly healthy.

Remak and subsequently Kussmaul, in 1863, showed that paraplegia urinaria may also be produced by a chronic inflammation of the pelvic cellular tissue setting up a lumbo-sacral neuritis extending to the sciatic nerves, and leading, as in the case recorded by Kussmaul, to fatty degeneration of the sheath and tubes of the nerve trunks.

I think I may claim from the foregoing analysis of facts to have established the following conclusions:—

1. That those cases of paralysis of the orbital nerves and of amaurosis following affections of the fifth nerve, which have been adduced as instances of reflex paralysis, arise either from an extension of neuritis from nerve to nerve, or are instances of coincident affections of different nerves.

2. That we cannot admit the occurrence of paraplegia in urinary disease as a result of spasm of the blood-vessels of the spinal cord.

3. That if reflex paralysis have any existence, it is a paralysis by inhibition.

4. That there is no necessity for the admission of such a phenomenon as reflex paraplegia, as the cases recorded as such belong to forms of either neuritis or myelitis. The fact that many such cases recover rapidly is no argument against this view. There is no reason why a process of rapid repair cannot take place in nervous as in other tissues.

5. That the three conditions of peripheral irritation which give rise to paraplegia of the lower extremities are diseases of urinary organs, dysentery, and certain affections of the womb.

6. That these conditions give rise to paraplegia in three different ways—(a) by an ascending neuritis which sets up a myelitis; (b) by extension of inflammation to the cord along the veins from the primary source of disease; (c) by the occurrence of a descending neuritis starting in the sacral plexus, and extending downwards along the sciatic nerves.

ART. XI.—*Medical Report of the Fever Hospital and House of Recovery, Cork-street, Dublin, for the Year ending March 31, 1884.* By JOHN WILLIAM MOORE, M.D., M.Ch., Univ. Dubl.; Fellow and Registrar, and lately Vice-President of the King and Queen's College of Physicians in Ireland; Physician to the Hospital, and to the Meath Hospital and County Dublin Infirmary; Lecturer on Practice of Medicine in the Carmichael College of Medicine, Dublin; Diplomate in State Medicine and Ex-Scholar of Trinity College, Dublin.

[*Concluded from page 130.*]

SPECIAL DISEASES.

Following the precedent established in former Reports, we shall now analyse in detail the hospital statistics for the year, considering, first, the Continued Fevers, including Pneumonia, the croupous variety of which disease may now with tolerable certainty be looked upon as a specific continued fever; secondly, the Exanthemata, or Eruptive Fevers.

I. THE CONTINUED FEVERS.—In Table VI. are shown the monthly, quarterly, and yearly admissions of patients suffering under the recognised forms of continued fever—simple fever, typhus, and enteric—during the five years ending March 31, 1884. The monthly mean temperature is included in the Table, which is also supplemented by a summary for the last ten years.

The admissions of cases of the three fevers just named numbered 479, compared with 402 in 1882–83, and only 268 in 1881–82. Indeed, with the exception of 1880–81, when the admissions of fever patients reached 570, the past year presents the highest return of the last ten years. The most striking feature in the “Summary” appended to the Table is the marked decline in the number of cases described as “Simple Fever.” It would certainly seem as though more successful efforts had been made in recent years to refer the milder febrile attacks to the category of the specific fevers—typhus and enteric.

TABLE VI.—Showing by Months, Quarters, and Years, the Admissions of Typhus, Enteric, and Simple Fever into Cork-street Fever Hospital, for five years ending March 31, 1884 ; also the Monthly Mean Temperature.

Mean Temp. Fahr.	Month and Year	Typhus Fever		Enteric Fever		Simple Fever		Annual Totals
		Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	
43·7	April, 1879	2	9	3	7	12	20	
47·6	May, -	5		2		4		
54·9	June, -	2		2		4		
56·3	July, -	4	13	2	3	7	26	
56·6	August, -	4		0		11		
53·3	September, -	5		1		8		
49·0	October, -	4	15	2	6	8	18	
43·1	November, -	5		1		3		
37·0	December, -	6		3		7		
39·0	January, 1880	18	57	7	21	16	40	
44·2	February, -	20		6		16		
44·4	March, -	19		8		8		
	Total, -	—	94	—	37	—	104	235
46·8	April, 1880	11	40	4	12	12	40	
51·0	May, -	18		5		16		
56·0	June, -	11		3		12		
57·9	July, -	12	44	6	27	6	18	
60·5	August, -	14		5		7		
57·6	September, -	18		16		5		
44·5	October, -	39	217	3	5	8	30	
43·4	November, -	83		1		15		
41·6	December, -	95		1		7		
32·4	January, 1881	50	119	0	3	7	15	
39·8	February, -	33		1		6		
42·3	March, -	36		2		2		
	Total, -	—	420	—	47	—	103	570
44·7	April, 1881	26	76	2	2	5	13	
52·3	May, -	32		0		5		
55·3	June, -	18		0		3		
59·9	July, -	16	64	4	6	8	20	
56·0	August, -	22		0		5		
53·6	September, -	26		2		7		
47·2	October, -	22	80	1	6	3	9	
49·4	November, -	4		4		2		
39·8	December, -	4		1		4		
43·9	January, 1882	13	28	1	6	2	8	
45·4	February, -	4		2		4		
45·9	March, -	11		3		2		
	Total, -	—	198	—	20	—	50	268

TABLE VI.—continued.

Mean Temp. Fahr.	Month and Year	Typhus Fever		Enteric Fever		Simple Fever		Annual Totals
		Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	
°								
46·0	April, 1882	13	25	1	9	9	20	
52·0	May, -	7		3		8		
54·7	June, -	5		5		3		
58·5	July, -	5		3		4		
58·2	August, -	12	25	6	17	0	4	
52·0	September, -	8		8		0		
49·3	October, -	5		3		0		
42·7	November, -	15		6		2		
37·4	December, -	43	63	5	14	5	7	
42·4	January, 1883	35		7		9		
42·8	February, -	70		3		8		
38·0	March, -	67		3		16		
			172		13		33	
	Total, -	—	285	—	53	—	64	402
45·5	April, 1883	53	135	3	10	5	18	
50·6	May, -	54		3		9		
55·3	June, -	28		4		4		
56·9	July, -	23		1		3		
58·3	August, -	28	70	2	7	12	21	
54·3	September, -	19		4		6		
49·0	October, -	13		2		9		
43·5	November, -	42		9		10		
41·8	December, -	22	77	5	16	9	28	
44·5	January, 1884	20		3		6		
43·4	February, -	27		3		6		
44·5	March, -	21		7		4		
			68		13		16	
	Total, -	—	350	—	46	—	83	479
SUMMARY FOR TEN YEARS.								
Mean Temp. Fahr.	Years	Typhus		Enteric		Simple		Totals
°								
49·1	1874-75	112		83		229		424
48·9	1875-76	109		47		162		318
49·4	1876-77	100		55		200		355
48·8	1877-78	134		51		220		405
47·5	1878-79	142		60		173		375
47·4	1879-80	94		37		104		235
47·8	1880-81	420		47		103		570
49·7	1881-82	198		20		50		268
47·9	1882-83	285		53		64		402
49·0	1883-84	350		46		83		479

TABLE VII.—*Showing the Number Admitted and Dead of Typhus Fever, of both Sexes, and at different Ages, for the year ending March 31, 1884.*

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	9	1	11·12	Under 5 - -	7	—	—
5 and under 15	55	—	—	5 and under 15	53	—	—
15 „ 20	18	1	5·56	15 „ 20	26	1	3·83
20 „ 40	61	13	21·31	20 „ 40	77	6	7·79
40 „ 60	17	13	76·47	40 „ 60	22	4	18·18
60 „ 80	3	3	100·00	60 „ 80	2	1	50·00
Total, -	163	31	19·02	Total, -	187	12	6·42
Total No. Admitted, 350		Total No. Died, - - 43		Percentage Mortality, 12·29			

(a) *Typhus*.—At the beginning of the year an epidemic of this form of continued fever was at its height, and no fewer than 63 patients suffering from it were under treatment in the wards. The epidemic had commenced in the late autumn of 1882, and was intensified by the occurrence of early winter-cold in November of that year. Table VI. shows that the admissions rose from 5 in October to 15 in November, and to 43 in December. Intense frost and heavy snow in this last-named month seemed to check the epidemic, for the admissions fell to 35 in January, only to rise again still more decidedly to 70 in February, and 67 in March. The controlling influence of excessive cold on the prevalence of typhus has already been noted and commented on in the Reports of this Hospital for 1880–81 (page 32), and 1881–82 (page 31). During April and May, 1883, the admissions remained very high (53 and 54), but in June, with the advancing summer, they fell nearly 50 per cent. to 28. The decline of the epidemic continued, with a slight interruption in August, until October, when the admissions numbered only 13. In November, coincidently with the first winter cold, there was a sudden rise in the admissions to 42, but afterwards one of the stormiest and most open winter seasons on record appeared to hold this very infectious but easily neutralised fever so thoroughly in check, that the admissions fell

to 22 in December, and to 20 in January, 1884. A slight increase of 27 cases in February was succeeded by a final fall to 21 cases in March.

The quarterly returns present the seasonal fluctuations of the admissions in a striking way. Thus, in the first quarter of the hospital year (April-June) 135 typhus patients were admitted; in the second quarter (July-September), 70; in the third quarter (October-December), 77; and in the fourth quarter (January-March), 68.

The deaths were—19 out of 135 patients (14·1 per cent.) admitted in the first quarter; 9 out of 70 (12·9 per cent.) in the second; 7 out of 77 (9·1 per cent.) in the third; and 8 out of 68 (11·8 per cent.) in the fourth quarter of the hospital year. The mortality was, therefore, lowest in the autumn, highest in the spring, or at the time of the greatest epidemic prevalence of the disease.

Table VII. illustrates the principal facts relating to the sex, age, and mortality of 350 typhus patients, whose illness was treated to a termination in 1883-84. At the close of the hospital year (March 31, 1884) 24 typhus cases remained under treatment; of these all recovered except *one*—a married man, aged thirty-five years, who succumbed to ataxic typhus with epileptiform (uræmic) convulsions on the twenty-fourth day. Including this death, which occurred on April 12, 1884, we find that 43 of the 350 typhus patients died—a figure which gives an average death-toll of 12·29 per cent.

The influence of advancing *age* in raising the mortality from this fever is strikingly exemplified in the Table. As authorities on typhus have long since observed, young children nearly always pass through their illness unscathed, even when profusely maculated. They spend most of their time in a disturbed sleep, and the fever very often terminates prematurely on the eighth, ninth, or tenth day. Table VII. shows that among 64 males and 60 females under fifteen years of age suffering from typhus, there was only *one* death—and that a doubtful case—a neglected male infant of fourteen months. This unhappy waif of humanity came into hospital on June 30, 1883, with his mother, who was about three weeks ill of typhus. The child was stated to have been ill for fourteen days before admission, and lingered until July 10. He was supposed to have typhus, but the diagnosis was at least problematical, and it is quite as likely that he died from neglect and inanition in consequence of his mother's illness. Even granting

that this was a fatal case of typhus, the fact remains that out of 124 typhus patients under 15 years, *only one* died—a death-rate of 0·8 per cent.

In marked contrast to this result is the high mortality among adults, and the excessive mortality among the aged. Between 20 and 40 years 138 patients came under observation, of whom 19 died (mortality = 13·8 per cent.); between 40 and 60 the admissions numbered 39, with 17 deaths (mortality = 43·6 per cent.); but between 60 and 80 there were 5 admissions, with 4 deaths (mortality = 80·0 per cent.).

The influence of *sex* is remarkably brought out in the Table. Thirty-one out of 163 males died—that is, 19·02 per cent.; whereas only 12 out of 187 females died—that is, 6·12 per cent. Among males the percentage death-rate rose from 5·56 at ages 15 to 20, to 21·31 at 20 to 40, 76·47 at 40 to 60, and 100 at 60 to 80. Among females the mortality was 3·83 at ages 15 to 20, 7·79 at 20 to 40, 18·18 at 40 to 60, and 50 at 60 to 80. Harder work of brain and hand, but above all intemperate habits, explain the feebler resistance of the male sex to typhus. The remarkable result is shown that the death-rate from this fever was more than three times greater among males than among females.

TABLE VIII.—*Showing the Number Admitted and Dead of Enteric Fever, of both Sexes, and at different Ages, for the year ending March 31, 1884.*

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	1	—	—	Under 5 - -	1	—	—
5 and under 15	6	—	—	5 and under 15	8	3	37·50
15 „ 20	4	—	—	15 „ 20	3	1	33·34
20 „ 40	14	2	14·29	20 „ 40	7	1	14·29
40 „ 60	1	—	—	40 „ 60	1	1	100
60 „ 80	—	—	—	60 „ 80	—	—	—
Total, - -	26	2	7·69	Total, - -	20	6	30·00
Total No. Admitted, 46		Total No. Died, - 8		Percentage Mortality, 17·39			

(b) *Enteric or Typhoid Fever.*—A falling off in the number of admissions from 53 in 1882–83, to 46 in the past year, and a rise in the number of deaths from 3 to 8, are the chief facts which have to be noticed relating to enteric fever. The death-rate rose from 5·60 in 1882–83 to 17·39. This was caused by the great fatality among the female patients—out of 20 no fewer than 6 died, or 30 per cent. Out of 26 male patients, on the contrary, only 2 died, the mortality being 7·69 per cent. The mortality was particularly high among girls under 15—as many as 3 deaths occurred among 8 patients. The immediate cause of death was in one case—that of a little girl, aged six years—convulsions on the twenty-sixth day; in the case of a woman, aged 46, it was pneumonia; in that of a girl, aged 14, peritonitis. On March 23, a girl, aged 19, died three days after admission on the twenty-fourth day of her fever.

The seasonal prevalence of this fever was, as usual, well marked. Of the 46 cases, 17 were admitted during the first six months, and 29 during the second six months; 10 came in during April, May, and June; 7 in the succeeding quarter; 16 in October, November, and December; and 13 in January, February, and March. The greatest incidence of the disease corresponded with the end of autumn—9 admissions taking place in November alone.

(c) *Simple Fever.*—Eighty-three patients were registered as suffering from this non-specific continued fever. The coincidence of the admissions with those of typhus patients is not so closely marked as formerly—another proof that the milder febrile attacks are now more critically classified than formerly. Of the 83 patients 18 came in during the first quarter (April–June), when the typhus admissions were 135; 21 in the second quarter (typhus admissions, 70); 28 in the third quarter (typhus admissions, 77); and 16 in the fourth quarter (typhus admissions, 68). It is possible that some of the 28 cases in the third quarter were really instances of mild enteric fever. The increase in the admissions in the summer quarter, when both typhus and enteric showed a decline, bears out the accuracy of the diagnosis of “simple fever,” summer being the season when the exciting causes of non-specific fever are most active.

(d) *Pneumonia or “Pneumonic Fever.”*—Many physicians will probably consider it a bold step on my part here to include “pneumonia” with the continued fevers—first, because it is well known that very different diseases are included under this generic

term; and secondly, because the essential nature of the fever in croupous pneumonia is far from being universally admitted *as yet*.

With regard to the former objection, I have to state that the hospital statistics deal only with that variety of pulmonary inflammation which is known as croupous pneumonia—an inflammation of the parenchyma of the lung, in which a fibrinous coagulable exudation takes place upon the free surface of the lung—that is, into the air vesicles.

As to the second objection, the following remarks will, I trust, serve as a trifling contribution to the settlement of this much-vexed and most interesting question.

During the year, 82 patients suffering from croupous pneumonia came under observation. The numbers in the three previous years had been 54, 47, and 31, respectively. This steady increase is not a little remarkable. The seasonal distribution of the admissions is shown in Table III. They were most numerous in April (13), June (11), and December (10); least numerous in August and February (3 each), and September (2 only). Of the 82 patients, 32 were admitted in the first quarter (April–June), 12 in the second, 21 in the third, and 17 in the fourth. This distribution of the cases is in accordance with the rule that the end of winter, the spring, and early summer, are the seasons when croupous pneumonia is most prevalent.

TABLE IX.—*Showing the Number Admitted and Dead of Pneumonia, of both Sexes, and at different Ages, for the year ending March 31, 1884.*

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 -	1	—	—	Under 5 -	—	—	—
5 and under 15	10	—	—	5 and under 15	4	—	—
15 " 20	7	—	—	15 " 20	2	—	—
20 " 40	17	3	17·65	20 " 40	16	1	6·25
40 " 60	13	4	30·76	40 " 60	9	—	—
60 " 80	2	1	50	60 " 80	1	—	—
Total, -	50	8	16·00	Total, -	32	1	3·12
Total No. Admitted, - 82		Total No. Died, - 9		Percentage Mortality, 10·98			

There were 9 deaths among the 82 patients, representing a mortality of 10·98 per cent., or nearly double the rate (5·5 per cent.) observed in the previous year. Eight out of the 9 deaths occurred among 50 male patients, and only one death among 32 females. Seven out of 9 deaths took place among 30 males, aged between 20 and 60 years. Greater exposure to the exciting causes and habits of intemperance explain the larger number of cases and the higher death-rate among males.

The pythogenic origin of the disease was strikingly illustrated in one instance. On February 10, 1884, a girl, 20 years of age, was admitted on the eleventh day of typhoid fever, from the house No. 10 Malpas-street. There could be no question as to the diagnosis. Unfortunately she was sent in as a case of typhus, and remained consequently in the typhus ward for one night. Her fever ran a typical course until the eighteenth day—the eighth after her admission—when the temperature rose to 105·3° in the evening, and her aspect changed to the muddy hue of typhus. Four days later an abundant crop of maculæ or “rose spots” appeared, particularly on the abdomen. She died on the thirty-first day of her illness, and on the fourteenth from the appearance of the new symptoms. On February 14th, 4 days after her admission, a young man, aged 22, came into hospital from the same house on the fourth day of an attack of croupous pneumonia.

This, of course, may have been merely a coincidence; but I cannot help thinking that the exciting cause of enteric fever in the one case was the exciting cause of pythogenic pneumonia in the other. Malpas-street is very unhealthy—the houses are old and dirty, ill-drained and dilapidated. The street runs down to the bottom of a valley, through which a small tributary of the Poddle river flows sluggishly. The district is a prolific hotbed of disease. Towards the end of October, 1882, the following remarkable outbreak of pythogenic disease came under my notice. On the 12th of that month a lad, aged 13, was admitted into Cork-street Hospital from 6 Malpas-street, suffering from croupous pneumonia. On October 31 the boy's father (John C.), a boatman, 36 years of age, came in with the same disease. On the 20th of the same month two girls, both aged 14, were admitted to the Meath Hospital in enteric fever—one from 11 Malpas-street, and the other from No. 13. On November 27 a girl, aged 20, was admitted to Cork-street Hospital in enteric fever from 7 Malpas-street, next door to the house from which the two cases of pneu-

monia had come a few weeks previously. On December 12 John C., aged 36, was again admitted to the Meath Hospital from 6 Malpas-street, with "renal dropsy." It was he who suffered from pythogenic (?) pneumonia in the previous October, as narrated above. Another coincidence occurred in March, 1883. On the 18th of that month Winifred N., aged 19, came into Cork-street Hospital from 6 Malpas-street, in an attack of "febricula," and the following day Anthony L., aged 27, was admitted from the same house, with left basic croupous pneumonia. In 1883-84 the only cases from Malpas-street were three scarlet fever patients, who came into Cork-street Hospital in October.

The claims of pneumonia to be considered a specific fever rest principally upon—

- (1) Its epidemic prevalence.^a
- (2) Its proved infectiousness in some instances.^b
- (3) Its pythogenic origin, and the remarkable correlation which appears to exist between it and enteric fever.
- (4) Its mode of onset, which exactly resembles that of the recognised specific fevers.
- (5) The presence of constitutional symptoms before the development of local signs, or even symptoms in many instances—in other words, the existence of a "period of invasion."
- (6) The critical termination of the febrile movement.
- (7) The presence of local epiphenomena in connexion with the skin—*e.g.*, eruptions of herpes, taches bleuâtres, and desquamation.
- (8) The occurrence of sequelæ, such as the attack of "renal dropsy," noted in John C.'s case.
- (9) The discovery of a bacillus, to which analogy at all events points as pathognomonic.

I have acquired the habit of expressing the relation of the local lesion in pneumonia to the essential disorder in terms of the intestinal lesion in enteric fever to that disease. Just as physicians and pathologists have long avoided the error of Broussais and his school—who held that the pyrexia, or feverishness, in enteric fever was symptomatic of, and secondary to, a local inflammation of the glands of the small intestine—so we shall come in time to avoid the similar, but more widely-disseminated, error of regarding the

^a See a paper on Pythogenic Pneumonia, by Dr. T. W. Grimshaw and Dr. J. W. Moore. Dublin Journal of Medical Science. Vol. LIX., p. 399. 1875.

^b Some Account of Pneumonia (Infectious) at Dalton, in the Spring months of 1883, by E. Slade King, M.D., and Sloane Michell, M.R.C.S. Practitioner, April, 1884.

pyrexia in pneumonia as symptomatic of, and secondary to, a local inflammation of the lung. The day is seemingly not far distant when we shall speak of "pneumonic fever" in precisely the same way as we use the term "enteric fever" at present—that is, to signify a zymotic, or specific blood-disease, manifesting itself after the lapse of a certain time (the period of incubation) by physical phenomena—objective and subjective—connected in this instance with the lungs.

II. THE EXANTHEMATA or ERUPTIVE FEVERS.—The principle of "substitution" in connexion with the prevalence of epidemic disease was exemplified in a very instructive manner during the past year. No sooner had typhus commenced to decline, than a still more serious outbreak of scarlatina took its place. Measles also and rōtheln, which were prevalent at, and for some time after, the beginning of the hospital year (see Table III.), soon began "to pale their ineffectual fire" in the lurid light of a conflagration of scarlet fever, the disease which after typhus was destined to play the most important role in the medical history of the year in Dublin.

(a) *Scarlet Fever*.—It was no doubt owing to my connexion with Cork-street Hospital that the Council of the Medical Section of the Academy of Medicine in Ireland recently did me the honour of asking me to open a discussion on the present epidemic of scarlet fever in Dublin. The remarks I made on that occasion were in substance the following:—

Seasonal Prevalence.—The first point of great interest is the strict obedience to the law of seasonal prevalence of scarlet fever which the epidemic has shown. Long since, the Registrar-General of England wrote: "Scarlatina discovers a uniform, well-marked tendency to increase in the last six months, and attain its maximum in the December quarter, the earlier half of the following year witnessing a decrease."* In Dublin the reports of the late Registrar-General of Ireland, and of Dr. Grimshaw, who now holds that important office, show that the disease is almost invariably most prevalent and fatal in the fourth quarter of the year; and Dr. Ballard^b draws inferences which confirm these results. Commenting upon the relation between the prevalence of scarlatina and a given temperature of the air, he observes that a mean atmospheric

* Twenty-eighth Annual Report of Births, Deaths, and Marriages. P. 38.

^b Loc. cit. P. 65.

temperature of about 60° , or between 56° and 60° , is that most favourable to the outbreak of scarlatina. A fall of mean temperature below 53° tends to arrest the disease. Dr. Ballard considers that a higher temperature than 60° does not appear to be in itself unfavourable. For the development of the disease it is necessary that the relative humidity of the atmosphere shall not exceed 86 per cent., or be much less than 74 per cent. Dr. Tripe, Medical Officer of Health for Hackney, arrives at similar conclusions, from an examination of statistics bearing upon the prevalence of the disease in London during a long series of years. Out of every 100 deaths, 17·2 occurred in spring, 21·8 in summer, 35·6 in autumn, and 25·4 in winter. According to this author, a temperature below $44\cdot6^{\circ}$ is adverse to the spread of scarlet fever, whereas a higher temperature increases it, especially if the humidity of the air is less than usual. Here, however, is a paradox: If a fall of temperature below 53° tends to arrest the disease, why does the mortality continue high during the winter months? In Dublin it continues very high until the ninth week of the new year—that is, until the beginning of March; and it remains high until the nineteenth week—that is, until about the beginning of May. The explanation of this fact is to be found in the diminished ventilation in the tenements of the poor during the winter months. The *materies morbi* of scarlet fever is very active, and, under circumstances of diminished ventilation and overcrowding, so potent a virus finds a congenial soil, and spreads readily, even during the winter months—when also the throat complications of scarlet fever are likely to be more severe and fatal than in summer.

Statistics.—Taking the statistics from the Cork-street Fever Hospital Reports for the years 1874–83 inclusive, I find that the total admissions of patients suffering from scarlet fever during the ten years in question numbered 738. Of these 738 patients, 192 were admitted in the first quarter of the year, 136 in the second quarter, 194 in the third, and 216 in the last quarter. In the first three months of 1883 only 2 cases were admitted; in the second quarter, 13; in the third, 46; and in the fourth, 85. The mortality was distributed over the year pretty much as was the prevalence of the disease; for instance, in the ten years mentioned, there were, in the first quarter, 38 deaths; in the second, 24; in the third, 31; and in the fourth, 56—total, 149. To go into particulars, I beg to submit the monthly admissions for the whole ten years (See Table X).

TABLE X.—Showing the Monthly and Annual Admissions and Deaths of Patients suffering from Scarlet Fever, who were treated in Cork-street Fever Hospital in the Ten Years 1874–83, inclusive.

DEATHS													ADMISSIONS									
Year	January	February	March	April	May	June	July	August	September	October	November	December	Total	Mortality per cent.								
1874	1	-	1	1	3	1	3	3	3	1	1	1	19	17.6								
1875	1	3	1	1	-	-	1	1	-	-	-	-	8	17.4								
1876	-	-	1	3	-	1	2	-	-	1	-	-	8	10.7								
1877	-	-	-	-	-	-	-	-	-	1	-	-	1	4.5								
1878	-	-	-	-	-	-	-	-	-	2	-	-	2	9.0								
1879	12	7	1	2	3	-	-	-	2	6	7	-	40	36.4								
1880	3	1	3	4	1	2	-	-	4	4	2	3	27	18.2								
1881	1	1	1	-	2	-	-	2	1	-	-	-	8	17.8								
1882	-	-	-	-	-	-	-	-	-	-	1	-	1	6.7								
1883	-	-	-	-	-	-	1	-	8	10	11	5	35	24.0								
	18	12	8	11	9	4	7	6	18	25	22	9	149	20.2								
	38			24			31			56												

Taking 1883, the admissions were—in January, 0; February, 0; March, 2; April, 0; May, 8; June, 5; July, 8; August, 15; September, 23; October, 27; November, 32; and December, 26. The diminished number of admissions in December was followed by a still further decrease in January (16 admissions), and the outbreak has since then been subsiding with the usual law. The epidemic reached its greatest prevalence at the end of October and through the month of November. Since then it has shown a tendency to decline. The quarterly admissions during the past hospital year were—first quarter, 13; second, 46; third, 85; fourth, 45.

The eight cases admitted in May, 1883, were connected with a local outbreak in the neighbourhood of Old Kilmainham and Bow-lane, west. Within two weeks of this outbreak two or three other cases occurred in Thomas-street and Francis-street. The epidemic remained in abeyance until August, when the admissions rose considerably. In the Report of this Hospital for 1875, attention was drawn to the fact that nearly every epidemic of scarlet fever arose in the neighbourhood of Francis-street, Patrick-street, and the lanes and alleys connected therewith—localities which have been, in fact, known as a scarlatina haunt for many years. In the same Report the necessity of careful supervision at all times, but especially in a period of a scarlatina epidemic, was pointed out. In the present instance, a majority of the cases admitted to the hospital came from the neighbourhood of Bride-street, Patrick-street, and Francis-street. There was, in a word, a very powerful focus of the disease in the district lying immediately to the N. and N.E. of St. Patrick's Cathedral.

Mortality.—The mortality amongst the hospital patients varied considerably from year to year. In the non-epidemic years the mortality was low; in the epidemic years it was sometimes exceedingly high. In 1874 the admissions were 108, and 19 patients died, giving a mortality of 17·6 per cent. In 1875 the admissions numbered 46, and the deaths 8, giving a mortality of 17·4 per cent. In 1876 the admissions numbered 75, and there were only 8 deaths, giving a mortality of 10·7 per cent. In 1877 there were 22 admissions, and there was only 1 death, the mortality falling to 4·5 per cent. In 1878 there were 22 admissions, and 2 deaths, the mortality rising to 9 per cent. The winter of 1878-79 was one of unparalleled severity. During December and January intense frosts prevailed; there was great distress, and formidable outbreaks occurred in Dublin, not only of scarlet fever, but also of measles and smallpox. In January, 1879, 42 patients, nearly

all of whom were young children, were admitted from the South Dublin Union in scarlet fever; of these no fewer than 19 succumbed. The mortality for that year, in consequence of the great death-rate in January, rose to 36·4 per cent. The epidemic thus set agoing in 1879 was continued all through 1880; so that, in the latter year, the admissions numbered 148, and the deaths 27, being 18·2 per cent. In 1881 there were 45 admissions, and 8 deaths, being 17·8 per cent. In 1882 the admissions fell to 15, and there was but 1 death, giving a mortality of 6·7 per cent. In 1883 the admissions numbered 146, with 35 deaths, the mortality being 24·0. This last figure practically represents the mortality in Cork-street Hospital of the earlier period of the present epidemic, which has been one of considerable severity.

TABLE XI.—*Showing the Number Admitted and Dead of Scarlet Fever, of both Sexes, and at different Ages, for the year ending March 31, 1884.*

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 -	29	9	31·03	Under 5 -	20	7	35
5 and under 15	51	9	17·64	5 and under 15	62	14	22·58
15 „ 20	2	—	—	15 „ 20	7	—	—
20 „ 40	7	2	28·57	20 „ 40	9	2	22·2
40 „ 60	1	—	—	40 „ 60	1	—	—
60 „ 80	—	—	—	60 „ 80	—	—	—
Total, -	90	20	22·2	Total, -	99	23	23·23
Total No. Admitted, - 189		Total No. Died, - 43		Percentage Mortality, 22·75			

Sex.—With reference to the sex of the patients treated in the hospital since April 1, 1883, up to the end of March, 1884—the males numbered 90, of whom 20 died, the mortality being 22·2 per cent.; while there were 99 females, of whom 23 died, the mortality being 23·23 per cent. The total admissions up to the end of March numbered 189, with 43 deaths, the general mortality being 22·75 per cent.

Age.—Again, as regards the ages of the patients—29 males and 20 females, under 5 years, were admitted, of whom 16

died—namely, 9 males and 7 females; between 5 and 15 years, there were 51 males and 62 females, of whom 23 died—namely, 9 males and 14 females; between 15 and under 20, there were only 2 males and 7 females, of whom none died; between 20 and 40, there were 7 males and 9 females, of whom 4 died, 2 males and 2 females; between 40 and 60, there was 1 male, who recovered, as did also 1 female. Nothing more conclusively shows the formidable character of scarlet fever, when it affects young children, than the foregoing figures. Typhus is comparatively a plaything among children, if previously healthy; but, on the other hand, scarlatina is usually a plague among children of the poorer classes in a city like Dublin.

Type of the Epidemic.—The prevailing type of the disease has been scarlatina anginosa, having regard to the number of cases in which the disease had been ushered in with severe sore throat, and in which it was subsequently complicated with glandular swellings in the neck and throat. In some instances great damage was done by cases of scarlet fever having been neglected in the earlier stages, or altogether overlooked. In several instances the patients were first admitted when in the stage of desquamation, with renal complications. One day, when walking from the Meath Hospital to Cork-street Hospital, I stopped a woman, who was carrying a pale-faced, delicate child, and asked what was wrong with it. I looked more closely, and saw that the child was “peeling.” The mother said she was going to see the dispensary doctor to get advice for the child, but I recommended her to go to Cork-street Hospital, where the child would be carefully looked after, and the danger to the public health would be prevented. Unfortunately, I saw no more of mother or child. From my experience in the extern department of the Meath Hospital, I am of opinion that many cases of scarlet fever were brought to the city dispensaries in the most infectious stage of the disease.

In some cases life was extinguished almost in a few hours by the malignancy of the fever poison. The appearance of these patients was not unlike that so characteristic of petechial typhus, the ataxic and adynamic symptoms being the same.

During the present epidemic we have had no very rapid case in the hospital. The shortest was three days from the initial symptoms. The most rapid case of which I have been cognisant in my own practice, ran its course in twenty-three hours. As to the period of incubation, I am now in the habit of speaking confidently as to the safety of those who have been exposed to the infection if

seven days have elapsed from the exposure. There is no ground for supposing that the period of latency is protracted beyond seven days; it is usually between three and seven, but it may be shorter—only one or two days.

Complications.—When the cold weather set in, acute desquamative nephritis became common. As regards the treatment of uræmic convulsions, the observations made by Dr. Leslie Maturin, formerly Physician to the South Dublin Union Fever Hospital at Kilmainham, and now Resident Medical Officer at Cork-street Fever Hospital, tend to prove that the best remedy is pilocarpine. In two cases of nephritis, œdema of the lung was the immediate cause of death.

Scarlatinal diphtheria occurred in a man forty-three years of age, who recovered, having come from a house where two children lay dead, and a couple of others were at the time recovering from scarlet fever. He recovered without a bad symptom, his throat having been sprayed frequently with sulphurous acid. The thick false membrane might be seen, as it were, melting down, finally becoming detached, and leaving the perforated mucous membrane underneath. In two other fatal cases, the pharynx, fauces, and tonsils, became coated with pappy exudation. One of these unfortunate patients, a young lady, sank with adynamia, so extreme and rapid in its development as to suggest the diphtheritic nature of the deposit. Suppression of urine prevented us testing for albuminuria. The other patient died of œdema of the glottis.

Diffuse cellulitis was not an uncommon complication. The danger to life is usually in direct proportion to the extent of this form of cellulitis. In one case diffuse cellulitis terminated in cancrum oris. At my morning visit I found a tiny black spot over the centre of the cellulitic swelling of the jaw, and this spread, so that in a few days a large cavity had formed in the cheek, through which the tongue could be seen. In another patient an attack of convulsions occurred. It was supposed to be due to the advent of nephritis. This view was entertained by the clinical clerk and by the nurse, who had large experience. They took means to treat the supposed renal complication. Next morning the real cause of the convulsions and swelling of the face proved to be an attack of erysipelas. This is of some interest, considering the close relationship of erysipelas and scarlet fever. The coincidence of these two diseases is not a new discovery, having been alluded to by Dr. Graves as occurring in the terrible epidemics of scarlet fever in 1803 and 1832 in

Dublin; and the late Mr. James Cusack also placed the same observation on record.

In a case in private practice, persistent temperatures of 105° gave me great anxiety, having lasted three or four days. I could hardly inspect the throat, owing to the manifest enlargement of the tonsils and the difficulty of separating the teeth. Suddenly an abscess in the left tonsil burst, and there was a profuse discharge of foul-smelling puss. I prognosticated a rapid defervescence when this occurred, and this opinion was verified by the result. The pulse, however, remained high, and the temperature shortly rose again. At this time the patient, a young lady, complained of severe pains in her shoulders, and the action of the heart was excited, as if she was about to have cardiac trouble. I put her on a mixture of salicylic acid, 80 grains; acetate of potassium, 80 grains; a little glycerine; and water to 8 ounces. Of this a tablespoonful was given every hour, until the pain and swelling of the joints subsided. The joints were packed with cotton wool, and the front of the chest was also covered with a layer of the same. She recovered from that only to suffer from another complication—phlegmasia alba dolens affecting the left leg. The bowels were obstinately confined during the greater period of the illness, but at last the lady satisfactorily recovered, although the pulse remained persistently high. This symptom reminded me of a lesson I learned from the late Dr. Stokes—that in fever a persistently high pulse should be regarded as forecasting the occurrence of phlegmasia alba dolens, or of pulmonary mischief.

(b) *Measles*.—A very few words will suffice to record the facts relating to this eruptive fever. The admissions declined from 24 in 1882–83 to 18. Ten of these 18 patients were males—7 under five years of age, 2 aged between five and fifteen, and 1 between fifteen and twenty. Amongst this number there was no death. There were 8 female patients—4 under five, among them an infant aged fourteen days, who succumbed on the seventh day of her illness. One patient was fifteen years, 2 others were aged between twenty and forty years, and another was no less than fifty years of age when she was attacked.

Sixteen of the 18 cases came under observation during the first 5 months (See Table III.) of the hospital year (April–August). In his “Yearly Summary” of the Weekly Returns of Births and Deaths in Dublin for 1883, the Register-General for Ireland observes that measles, which proved fatal in 567 instances during

1882, caused but 27 deaths last year—a number which is 197 below the average for the 10 years 1873–82. These 27 deaths were distributed as follows:—First quarter, 1; second, 9 (all of which occurred in No. 2 North City, Coleraine-street District); third, 10; fourth, 7. In the first quarter of 1884, only 3 deaths from measles were registered in the Dublin Registration District. This distribution of deaths corresponds with the hospital admissions. But the curious fact is brought to light that, whereas in the year ending March 31, 1882, the admissions were only 57, and the deaths in the Dublin District as many as 580, in 1883–84 there were 18 admissions and 29 deaths. This result implies either that a much larger percentage of patients was treated in hospital, or else that the type of the malady became wonderfully milder as the epidemic died out.

TABLE XII.—*Showing the Number Admitted and Dead of Measles, of both Sexes, and at different Ages, for the year ending March 31, 1884.*

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	7	—	—	Under 5 - -	4	1	25
5 and under 15	2	—	—	5 and under 15	—	—	—
15 „ 20	1	—	—	15 „ 20	1	—	—
20 „ 40	—	—	—	20 „ 40	2	—	—
40 „ 60	—	—	—	40 „ 60	1	—	—
60 „ 80	—	—	—	60 „ 80	—	—	—
Total, -	10	—	—	Total, -	8	1	12·5
Total No. Admitted, 18		Total No. Died, - 1		Percentage Mortality, 5·5			

(c) *Rötheln, or German Measles.*—In April 7 cases, and in May 3 cases, of this eruptive fever were admitted, all of them from one institution—the Elliott Home, in Townsend-street. Five of the 10 patients were boys, whose ages ranged from six to nine years, and 5 were females, aged from four to eight, except 1 maid servant of eighteen years. Apart from this purely local epidemic, 2 sporadic cases came in—1 in June, a little girl of five, from Stable-yard,

Grand-canal, and the other in July, a male, admitted from 43 Essex-street.

As bearing upon the question of the length of the period of incubation, the dates of admission of the Elliott Home cases are of interest:—April 19, two cases, both patients having sickened two days previously; April 28, two cases, one patient three days ill, the other five days; April 29, two cases, both patients two days ill; April 30, one case, two days ill; May 9, one case, three days ill; May 10, one case, two days ill; May 22, one case, two days ill.

There are here four distinct periods at which cases arose, from ten to thirteen days distant from one another—namely, April 17, April 27, May 7, and May 20. This closely agrees with the accepted duration of the latent or incubation period of R \ddot{o} theln, which is about twelve days.

(d) *Varicella, or Chicken Pock*.—Eight sporadic cases were treated in the wards during the year. In most instances much excitement was caused through a mistaken diagnosis of smallpox having been made prior to admission. The characters of the rash and the course of the illness stamped the cases as being unmistakably varicella. Six of the patients came from public institutions—a boy, aged six, from the North Dublin Union Workhouse, in July; a girl, aged nine, from the same place, in August; a girl, aged eleven, from a convent in North William-street, in October; a girl, aged fourteen, from St. Catherine's School, Hanbury-lane, in November; a man, aged twenty-five, from All Hallows' College, Drumcondra, in February; and a girl, aged four, from the Elliott Home, in March.

Besides these, two little girls, aged five and seven, came in from 9 Brown-street in November. The infection showed no inclination to spread, and the cases were essentially non-epidemic and sporadic. The patients all recovered—*ça va sans dire*.

THE WEATHER.

Table XIII. contains an abstract of observations taken twice daily in the City of Dublin during the hospital year 1883–84.

The *Mean Height of the Barometer* during the year 1883 was 29.923 inches. The highest observed reading was 30.802 inches at 9 a.m., on February 23rd. The lowest observed reading was 28.573 inches, at 9.50 p.m., on January 25th. The extreme range of atmospherical pressure was 2.229 inches.

TABLE XIII.—Abstract of Meteorological Observations taken at 40 Fitzwilliam-square, West, Dublin, by J. W. MOORE, M.D. Dub., F.K.Q.C.P., F.R. Met. Soc.
1883.

Month	Mean* Height of Barometer	Mean* Temp.	Mean* Humidity	Rainfall† in Inches	Rainy‡ Days	Mean* Direction of Wind	Remarks
January, -	" 29.745	° 42.7	% 85.8	" 2.679	20	S.E., S.W., W.	An open, rainy, stormy month. The mean temperature was 2° above the average.
February,	29.905	43.4	85.0	3.752	17	S.W., W.S.W.	Earlier portion of month stormy with heavy rains. Then fine, quiet, and chiefly mild and open weather.
March, -	30.004	38.1	79.1	1.056	12	N.W., N., E.N.E.	Intensely cold and dry, with constant polar winds and frequent hail and snow. Mean temperature 5° deficient.
April, -	29.992	46.9	79.1	2.207	10	E.S.E., W.	A cold dry month, with prevalent E. & S.E. wind, moderate cloudiness, and much sunshine.
May, -	29.967	51.7	73.8	2.023	13	N.E., S.W.	Favourable from every point of view.
June, -	29.970	56.2	78.7	1.932	18	W.N.W., E. E.N.E.	At first fine and bright; then cloudy, showery, changeable, and cool.
July, -	29.830	57.6	78.4	2.222	22	N.W., S., S.S.E.	Changeable, cool, and very showery, with but little sunshine.
August, -	29.974	58.6	81.7	3.307	14	W., S.W.	At first unsettled, with heavy rains and high winds; then dry, comparatively bright and warm.
September,	29.811	54.7	86.8	3.637	14	W.N.W., S.E. & calm.	Rough and unsettled at beginning and end, quiet and fine from 9th to 19th.
October, -	29.943	49.6	85.8	2.205	16	W., S., N.W.	Changeable; colder at beginning than at close.
November,	29.747	43.4	85.7	3.074	19	W., S.W.	Very unsettled and rather cold, but with several bright, sunny days. Glowing skies at sunrise and sunset.
December,	30.182	42.5	85.1	1.257	13	W.	Open, breezy, and comparatively fine, snow absent, scarcely any frost; glowing skies at sunrise and sunset.
Means and Totals -	" 29.928	° 48.8 §	% 82.1	" 29.351	188	W., S.W., N.W., S.E.	Continuously open weather during the first two months was succeeded by a period of bitter cold in March, and less severe cold with dryness in April. Six weeks fine weather in May and June gave place to a cold and showery summer, which in turn was followed by a tolerably fine autumn. The early winter was remarkably open, but unsettled.
1884.							
January, -	29.969	45.2	84.2	2.358	18	W., S.W.,	Singularly open and frostless, scarcely any easterly wind, but a great excess of cloud.
February,	29.751	43.0	84.2	3.518	20	S.E., S.W.	Increasing prevalence of S.E. winds and lower temperature, but frostless, cloudy, and often cheerless and wet.
March, -	29.829	44.9	78.8	1.858	17	S., S.E., W.	Generally favourable. Dry from 13th to 31st. Warm from 14th to 19th.

* The columns marked with an asterisk are the results of observations taken daily at 9 a.m. and 9 p.m. The readings of the Barometer are corrected and reduced to 32° at Mean Sea Level.
† The rainfall is recorded daily at 9 a.m.
‡ A "Rainy Day" is one on which at least .01 inch of rain falls.
§ The Mean Temperature, calculated from the maximal and minimal readings of the Therm meter by Kaemtz's Formula, was 48.2°.

The *Mean Temperature* of the year, deduced from the maximal and minimal readings of the thermometer in the shade by Kaemtz's formula, was 48.2° . The highest reading was 71.4° on August 26th; the lowest reading was 25.4° on March 24th. The average mean temperature for the years 1870-82, calculated in the same way, was 48.6° . The mean temperature, deduced from the daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m., was 48.8° .

Rain fell on 188 days, including snow or sleet on 23 days, and hail on 30 days. The average number of rainy days in the years 1870-82 was 199.9. The total rainfall measured 29.351 inches, compared with an average of 29.031 inches in the years 1870-82. Of this amount 13.649 inches fell in the first six months of the year, on 90 days.

As regards the *Direction of the Wind*, 730 observations were made during the year, with this result—N., 38; N.E., 38; E., 53; S.E., 67; S., 86; S.W., 88; W., 223; N.W., 83; Calms, 54.

A general review of the year 1883 shows that the annual mean temperature was about half a degree below the average; the rainfall (29.351 inches) was slightly above the average of the thirteen years 1870-82 (29.031 inches), and decidedly above that of the longer period of eighteen years, 1865-82 (28.359 inches).

The rainy days, on the contrary, were below the average both of the thirteen years, 1870-82 (199.9 days), and of the eighteen years, 1865-82 (195.4 days). The amount of cloud was 2 per cent. below the average—namely, 58.8 per cent. against 60.8 per cent.

The first quarter of 1884 was favourable to the public health, the weather being for the most part mild and breezy.

January was singularly open and frostless, with scarcely any easterly wind, but a great excess of cloud.

February showed an increasing prevalence of south-easterly winds and lower temperature, but the weather was frostless, cloudy, and often cheerless and wet.

March was generally favourable. A dry period set in on the 13th, lasting until the 31st. The weather was exceptionally warm for the season from the 14th to the 19th.

THE HOUSE OF RECOVERY.

This Report would not be complete without some account of the new Convalescent Department, which has recently been opened for the reception of patients, and which promises to play a very prominent and useful part in the future history of Cork-street Fever Hospital.

The Convalescent Home attached to this hospital—or the “House of Recovery,” as it is happily called—is a large detached four-story building (connected with the hospital by a covered-in open air passage), and was at one time used as part of the hospital. It was then divided into a series of small rooms, nine on each floor, with a long corridor running through the centre. A great deal of space was wasted by the existence of thick cross walls, chimney stacks, and staircase. These have all more or less been removed, and on the two upper floors six large wards have been provided, four of them being 34 ft., by 31 ft. and two 24 ft. by 15 ft.

The ground floor is occupied by five wards, about 19 ft. by 16 ft. each, with nurses' rooms, waiting rooms, and hall; the last-named leading to a large easy flight of stone stairs, which together with the lavatory accommodation, is provided for in a new block of building erected outside the main structure. On each of the floors there are bath-rooms and closets on either side of the staircase, and in close proximity to the wards, though completely separated from them by a wide passage having large windows at each end. These windows are formed like sash doors, which can open right down to the floor, and have iron bars outside, so when they are open the passages to all intents are open-air corridors.

The basement is occupied by the kitchen, scullery, store-rooms, &c. Hot and cold water are laid on to the baths and apartments requiring the same; the soil pipes from the closets are outside the building, having ample ventilating pipes running to the top of the house.

The wards have ventilators on Tobin's principle; also ventilating shafts running to the apex of the roof, with Boyle's patent air-extracting cowls on top. The windows are all of a new description, the lower portion being casement and the upper portion sashes which are pivot hung, so that complete ventilation of each ward can be secured. The floors are laid with boards in narrow widths ($3\frac{1}{2}$ inches), and dowelled so that no nail shows, and the whole is like the deck of a ship. The corridors, bath-rooms, and water closets on the upper floors are laid in concrete; those on the ground floor, together with the hall, are laid with encaustic tiles. The fire-places in each ward are surrounded by hot air chambers, thus securing a large amount of heat, which also is evenly distributed. The plastering of the walls is done in Kean's cement, which is very hard and has an even surface, and can be washed down.

The alterations have been carried out at considerable expense, as the cutting away of so many walls and the introduction of heavy

iron girders was a troublesome undertaking; also the plumber's work was on a large scale. In fact, the building was completely gutted—new floors, roof, &c., being requisite. The architects were Messrs. Millar and Symes, 197 Great Brunswick-street, Dublin, to whom I am indebted for the foregoing description, and who on the other hand desire to express their acknowledgments to the medical staff of the hospital for some valuable advice. The work was executed by Mr. C. Jolly, of Blackrock, Co. Dublin, the total cost being about £2,800.

CONCLUSION.

Apart from the routine of the hospital, nothing occurred during the past year to call for special remark, with one sad exception—during the progress of the works connected with the House of Recovery, one of Mr. Jolly's employes fell from a great height, sustaining injuries which quickly proved fatal.

It is once more my privilege to bear testimony to the self-denying exertions of all connected with the hospital in the effort to maintain its prestige, and above all to relieve the sick and comfort the dying.

THE TREATMENT OF CHOLERA BY OZONE.

THE antiseptic treatment is admitted to be the most rational line to follow in a case of cholera, but as we are ignorant of the exact nature of the agent of cholera, and of the conditions under which it flourishes, M. Romain Vigouroux points out (*Progrès Medical*, July 19th) that we ought to seek for an antiseptic whose sphere of activity is wide, and whose destructive action is brought to bear indiscriminately upon all parasitic organisms. Ozone has pre-eminent claims to be considered as having such properties, and its powers have already met with some recognition. The experiments of M. Chappuis demonstrated that ozone neutralises all the germs contained in the air, and, further, that the essences of the volatile oils owe their undoubted properties to the production of a certain quantity of ozone. All the ozone-producing apparatus in use at the present day is based on the fact that the electric discharge has the power of partially converting oxygen into ozone. The ordinary electric machine in use for electro-therapeutics would be most suitable for the preparation of the ozone. The patient could be placed on an insulating stool and charged with the ozone. This line of treatment would have the advantage of improving the general nutrition and increasing the vital powers at the same time, and M. Vigouroux concludes his paper by expressing the belief that in electricity we probably have the most efficacious remedy against cholera yet known.—*Med. Times and Gazette*.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Chapters in the History of the Insane in the British Islands. By DANIEL HACK TUKE, M.D., F.R.C.P. London: Kegan Paul, Trench, and Co. Pp. 548.

OF the many reforms, social and philanthropic, which have been effected in Great Britain during the past century, there are few of greater interest, and certainly none more benevolent, than that which had for its object the improvement in the care and treatment of the insane—a reform which was first started in the year 1792 through the humane exertions of a man whose name must ever be remembered with deep respect and gratitude. In the establishment of the Retreat at York, William Tuke laid the foundation, so to speak, of that system of “non-restraint” in the management of the insane, which in subsequent years, mainly as the outcome of the teachings and practice of Conolly and Gardiner Hill, was “expanded into, and finally adopted as a universal method, and as a rule having almost the sanctity of a vow.” The mantle of William Tuke has fallen upon his descendants, and that the task which he, as it were, bequeathed to them, of exploring the then unknown fields of morbid psychology, has been well fulfilled, is evidenced by the many valuable works from the pen of him who now so worthily bears the family name, and who, in the volume before us, has become the historian of that movement, and of the general history of the insane in these countries, both before and since the epoch of their deliverance from the cruelties engendered by superstition, and from the bondage begot of fear.

Scattered through the pages of old and for the most part inaccessible books, or buried deep in the parliamentary and judicial records of the past, the facts relating to the popular notions regarding insanity, and the modes of treatment adopted with the insane, lie concealed. To the disentanglement of these, and to the arrangement in order of the various changes in the treatment of lunatics in England, Scotland, and Ireland since the period of the Norman

Conquest, Dr. Daniel H. Tuke has devoted much and laborious research, and the result appears in this interesting volume, which adds another to the list for which we are already indebted to him.

In the earlier chapters the author has collected much curious and interesting information concerning the condition and treatment of the unhappy victims to mental derangement in the "olden time," when whippings, "the stocks," and "the brank," were the orthodox measures pursued to quell the ravings of the wandering maniac. The history of Bethlem and St. Luke's Hospitals is treated of most learnedly at considerable length, and many passages from well-known English authors referring to *Bedlam*—as Bethlem was then commonly called—are quoted. The succeeding chapters contain an interesting narrative of the reform in the treatment of the insane in England, in connexion with which the York Retreat naturally occupies a prominent place. Criminal and Chancery lunatics, and idiots and imbeciles, are dealt with in chapters VI., VII., and VIII., and the history of insanity and of lunacy legislation in Scotland and Ireland follows. The chapter relating to Ireland contains a clear *résumé* of the numerous legislative enactments which have been framed since special attention was first directed to the neglected condition of the insane in this island, and the author remarks that "he must say that he has found a large amount of strenuous effort and labour devoted to the improvement of the condition of lunatics, miserably situated as they formerly were in general when confined in houses of industry, or at home in hovels where their needs could not possibly be attended to, even when, as was doubtless frequently the case, they were regarded with great affection;" and he adds that "the best thing we can hope, for the effectual care of the insane in Ireland is legislation in the direction indicated by Lord O'Hagan and Mr. Litton." Chapter XI. contains the history of the progress of psychological medicine for the forty years from 1841 to 1881, this being the address delivered by the author as President of the Medico-Psychological Society, in the year 1881. By many these pages will perhaps be read with greater interest than any others in the book, as therein is sketched clearly and concisely the great advances that have been made in our knowledge of the physiology and pathology of the brain, and in the practical treatment of cerebro-mental maladies. In bringing his task to a conclusion, the author, speaking of asylums and the fruit they bear, thus writes:—"As of those whose hourly labour is performed in these and other institu-

tions, so of those who were labourers, however humble, in the early days of asylum reform at the close of the last and the beginning of the present century, it must never be forgotten that work unobserved by the public eye, but conscientiously performed for the unfortunate class which to a large extent is unable to appreciate or thank the kindly hand which shields them from cruelty or saves them from neglect, will find its reward in the conscience, and also in the increased happiness of those whom it benefits, though it may not set the worker on any pinnacle of fame. It is to such that the author of 'Romola' refers when speaking of the valiant workers whose names are not registered where every day we turn the leaf to read them, but whose labours make a part, though an unrecognised part, of our inheritance, like the ploughing and the sowing of past generations." This work fully sustains Dr. Tuke's reputation as an author, and it is not too much to say that it ought to find a place on the book-shelves of all those who are in any way connected with the practical management of the insane.

Prostitution under the Regulation System. By YVES GUYOT.

Translated from the French, by E. B. TRUMAN, M.D. London: George Redway. 1884. Cap. 8vo. Pp. 348.

THIS subject is an unpleasant one, and yet one that must be faced resolutely by the physician, the statesman, and the social economist. From the earliest ages prostitution has ministered to the depraved appetites of poor human nature, and the question to be determined is whether it is to be left to its natural course, or, in fact, whether free trade is to be allowed; or whether it is to be regulated as in most European countries, and, if so, how, and by what machinery?

It is a misfortune that most, if not all, the writers on this subject approach it as partizans, and not as calm, scientific inquirers. We have perused many works on the subject, and, including the present volume, recall no exception to this regrettable state of things. The controversy has been keenly fought out during the last few years in reference to the "Contagious Diseases Act"—or, as that statute is conveniently described, for the benefit of its female opponents, the "C. D." enactment—and for the present in the United Kingdom its opponents have been able to secure its practical suspension. Since that event regrettable occurrences

have supervened. The Recorder of Colchester announced from the judicial bench that venereal diseases in the garrison had trebled in extent; and this is not to be wondered at when it is on record that, on a transport being signalled as about to enter Portsmouth, upwards of forty unfortunates, who were under treatment in the Lock Hospital, left in a body (uncured), chartered a small steamer, and boarded the transport, the inmates of which presently dispersed over the country.

Regulation being at present practically dead, even in our garrison towns, let us turn to Paris, where it is in full swing, being conducted by a special police, known as "agents of morals," and who are entrusted with powers of a most stringent character. They can arrest in the street any unlicensed woman whom they suspect to be a prostitute, and can even break in at night into suspected lodgings and boarding-houses to search for such persons. They are active even beyond the bounds of discretion, and several appalling cases are given (p. 92) of innocent women, married as well as single, being arrested on suspicion in the streets by the agents and locked up for the night in the common cell along with a number of prostitutes, where they remained almost mad with shame! In vain these victims gave their names and addresses; they were detained until reclaimed by their husbands or other relatives. Our author shows, on the other hand, that the agents are by no means inaccessible to "palm oil," and frequently let women alone for a consideration.

If this rigour were effectual it would quite counterbalance occasional hardships occurring to innocent individuals, particularly if prompt punishment were always meted out to agents of morals whose zeal ran ahead of their discretion. The system of regulation in Paris is, however, a failure, if not worse. Less than four thousand women are inscribed in the books of the police, while the sad profession is plied by a number variously estimated at from thirty to fifty thousand in the gay city of pleasure on the banks of the Seine. Taking the mean of these figures, we see that the most inhuman severity on the part of the agent brings under the operation of the law about one-tenth—the remainder are *filles insoumises*, or privateers.

The author makes grave and apparently well-merited complaints about the baneful results of the periodical inspection of these women as a means of spreading disease (p. 209). He speaks of 200 women being examined in two hours, and with a single

speculum; and cleanliness would be utterly impossible under such circumstances. He quotes Mr. Acton, before a Committee of the House of Lords, as stating that "the English surgeons inspected 150 women in the space of two hours, and he asked how they found time to cleanse their instruments."

M. Guyot gives a very painful description of the well-known Hôpital St. Lazare—the Lock of Paris—and we trust that his statements are overdrawn. His remarks are in the worst possible taste. The hospital is, or was, managed by a female religious community; and it must be a matter of congratulation that any decent women could be found to undertake such repulsive duty. It is the more to be regretted, therefore, that M. Guyot alludes to these nuns (p. 225) as "devout old maids," and again as "more or less authentic maidens." He adds, that they are "quite ready to avenge themselves for those worldly pleasures which they never can taste, and of which these unhappy girls bring them, as it were, a glimpse." Again (p. 222) he says, "the nuns, as a means of punishment, keep back the wine from the sick, *in order* that they may sell it to them afterwards."

Still more horrifying is the accusation launched against the Director of St. Lazare. When children or very young girls are found engaged in immoral practices they are sent to St. Lazare, while the Prefect of Police writes to the *maire* of the parish in which they were born. We now quote the *ipsissima verba* of M. Guyot's revelation of the alleged practices of the Director of St. Lazare (p. 226):—

" 'And when these proceedings have resulted in nothing?' I asked the Director.

" 'We find places for them,' he told me.

" 'Where?'

" The Director became embarrassed.

" 'Come, tell me then.'

" The Director—'IN THE REGISTERED HOUSES' " (*i.e.*, the licensed houses of ill-fame).

We earnestly trust that M. Guyot is mistaken in this.

The work is disfigured by numerous inaccuracies, even in the *errata*, and some misprints, such as "Joseph" for "Josephine." One statement (p. 321) is most interesting to our readers who will be presently returning from their vacation outing, and who will wish to change their francs for the conventional shillings of home use. The author gives the case of an infant who was inoculated

with syphilitic virus at Lyons, in the year 1859. The case was taken up by the correctional tribunal of Lyons, which fined the operating physician one hundred francs, which the translator, in parenthesis, states are equal to £4 3s. 4d. of British money. We trust that the remainder of the translation is not equally inaccurate. Would the translator favour the readers of this Journal with the address of this Phoenix of a money-changer who will convert our foreign money on such terms?

A New Method of Treating Chronic Glaucoma, based on Recent Researches into its Pathology. By G. L. JOHNSON (London). London: H. K. Lewis. 1884.

THIS short monograph (pp. 48) is an elaborated and re-arranged thesis originally written for the M.B. degree, and read at Cambridge in 1882.

The frontispiece is a diagram of the lymphatic and vascular systems of the eye, the vascular scheme of which is copied from Leber's diagram in Stricker's hand-book, whilst the lymphatic scheme the author has constructed partly from his own observations, and partly from those of others. The essay is divided into three parts—I., Anatomy and Physiology; II., Pathology; III., Treatment.

In the first two sections there is little that is new, but the author has succeeded in arranging in a connected and readable form the various facts which the laborious researches of Leber, Max Knies, Weber, De Wecker, Brailey, Priestley Smith, and others, have brought to light. The third section on Treatment is the most important. The operation which he advocates for the cure of chronic glaucoma was first suggested by Mr. Conell and Mr. Rouse, and consists in thrusting a double edged modified Wengel's knife through the sclerotic into the vitreous, towards the centre of the globe. The point of the knife is entered about 4 mm. behind the sclero-corneal junction, and should penetrate to the distance of about 1 cm. (nearly half an inch), the flat side of the instrument lying not quite parallel, but somewhat oblique, to the long axis of the eye.

The knife is then *very* slowly withdrawn, and if the tension is high, slightly turned on its axis so as to allow the lymph freely to escape. The author has performed this operation himself in six cases, and seen it performed in about ten more; in no case has he seen any bad results, whilst in some the success was brilliant.

The operation is termed "scleral paracentesis."

We feel sure that Ophthalmic Surgeons will welcome any operation as a change from iridectomy and sclerotomy, both of which have proved themselves quite inadequate to the tasks imposed upon them; but we fear that Mr. Johnson has hardly tried the operation in a sufficient number of cases to justify him in speaking with very great authority on the subject. De Wecker praised sclerotomy even more than Johnson praises paracentesis, and yet sclerotomy seems, in the hands of most surgeons, to have proved as decided a failure as iridectomy. There are cases where any one of the three operations will give brilliant results, and we fear there are cases too where paracentesis will fail as signally as the others have failed.

We omitted to note that at page 44 there is an inaccuracy of expression—“ $\left(V = \text{shadows only, or } \frac{20}{\text{nil}} \right)$,” which is inexcusable.

$\frac{20}{\text{nil}} = \infty$, not shadows. Such misleading attempts at would-be accuracy are most objectionable.

To those who wish a short, accurate, and readable account of the physiology and pathology of glaucoma, we can recommend this essay.

The Leamington Waters: Chemically, Therapeutically, and Clinically Considered. By FRANCIS WILLIAM SMITH, M.D. London: H. K. Lewis. 1884. Medium 8vo. Pp. 61.

THIS is an admirable little volume, and is part of a movement which cannot be too much commended—to use the natural springs and baths of the United Kingdom instead of sending the invalid on laborious and distant journeys to foreign watering-places, where he finds himself surrounded by strangers, whose language he often does not understand, and whose diet and habits are unsuitable to him. On this subject the late Sir Robert Christison says:—“There is no doubt that, in search of relief from most varieties of mineral waters, our countrymen have for a long time past made it a senseless fashion to repair to Continental springs, when they have comparatively at their doors springs of the same quality, beautiful surroundings, national amusements, and, above all, British comforts.” If as much pains were taken to investigate and perhaps to puff our own springs and baths as are taken with their foreign congeners, we might be spared many a tedious journey and much expense.

The author properly commences with a historical and topo-

graphical account of Leamington—its drainage, water-supply, and other sanitary requisites, which appear to be in a most satisfactory condition. He gives an analysis of the water of the pump-room well, which is rich in sodium sulphate and chloride, along with the chlorides of calcium and magnesium, with traces of silica and iron and of magnesium iodide and bromide—in fact, the water appears to us to be a very valuable natural mineral aperient. The author compares it to that of Homburg; but, although it may have similar effects, it differs in chemical constitution. Sodium sulphate is the strong point in the Leamington water, but is absent from that of Homburg. Moreover, there is much less carbonic acid gas. The Leamington water rather resembles that of Marienbad; and, as might be expected from its constitution, has excellent effects in abdominal plethora, in pelvic congestion, in piles, in congestion of the liver or of the kidneys, in gout, and in the effects of too free living. Leamington is in the centre of England, and its waters were once visited by thousands of invalids annually. There is no reason why this should not again be the case; and we think that Dr. Smith's *brochure* is calculated to aid in bringing this about.

Regional Surgery, including Surgical Diagnosis. A Manual for the Use of Students. Part II. By F. A. SOUTHAM, M.A., Assistant-Surgeon to the Manchester Royal Infirmary. London: J. & A. Churchill. 1884.

Two years ago Mr. Southam published the first part of his book, which was devoted to the regional surgery of the head and neck. He has now followed with a further volume, treating of the upper extremity and thorax. The purpose of a book of this sort is to stimulate the student in the application of anatomy to surgery, and to help him in the diagnosis of various surgical affections. The task has been most zealously and laboriously done by Mr. Southam, who has in the two volumes already published provided a most important aid to the student. Throughout the text all allusions to collateral subjects are followed by figures referring to the sections in which they are spoken of at length. The book is admirably arranged in all respects. It is not a "cram," but it will, on the contrary, be found to provide methods and materials which will be most useful to senior students. We congratulate Mr. Southam on the excellent manner in which, so far, he has carried out his intentions.

PART III.

HALF-YEARLY REPORTS.

REPORT ON MATERIA MEDICA AND THERAPEUTICS.*

By WALTER G. SMITH, M.D., Univ. Dubl.; F.K.Q.C.P.; King's
Professor of Materia Medica, School of Physic, Trin. Coll.
Dubl.; Physician to Sir P. Dun's Hospital.

ALKALOIDS.

Nomenclature of the Alkaloids of Belladonna and Stramonium.—
E. Schmidt, having received several inquiries from physicians and others as to what substance was to be understood under the term "daturin," and in what it differed from atropin, answers the question upon the basis of the investigations carried on by himself and by Ladenburg. He points out that in those investigations it was ascertained by different methods that the two alkaloids, atropin and hyoscyamin, are contained in *Atropa Belladonna* as well as in *Datura Stramonium*. The experiments of the author showed that in both plants the principal part of this alkaloidal mixture consists of atropin, having a melting point of 115° – 115.5° C., the quantity of hyoscyamin remaining in the mother-liquor after the crystallisation of the atropin being considerably smaller. According to the author's experience the yield of "daturin," which name is used to describe the basic *mixture* isolated from *Datura Stramonium*, varies very considerably according to the quality of the seed. For instance, four samples of thorn-apple seed from different sources yielded from five kilos respectively 12.5, 18.4, 2.6 and 10.2 grams of yellowish-white crude "daturin." From fifty to seventy per cent. of this crud daturine consisted of pure atropin melting at 115° – 115.5° C. Moreover, a preparation of crude "daturin," received from Herr Trommsdorff, of Erfurt, from which a first crystallisation had been

* The author of this Report, desirous that no contribution to the subjects of Materia Medica and Therapeutics should remain unnoticed, will be glad to receive any publications which treat of them. If sent to the correspondents of the Journal they will be forwarded.

removed, yielded still nearly forty-five per cent. of pure atropin. Similar relations were also observed in the crude "atropin" from belladonna root. Ten grams of crude "atropin," prepared by the author, yielded in repeated spontaneous evaporation of its solution in alcohol between five and six grams of shining acicular crystals of atropin, melting at 115° – 115.5° C. Similarly ten grams of crude "atropin," supplied by Herr Trommsdorff, contained rather over six grams of pure atropin. It appeared probable that the mother-liquors still contained considerable quantities of atropin, probably hindered from crystallising by the admixture of other bases, and in this respect no essential difference was observed between the mother-liquors of crude "atropin" and those of crude "daturin."

In the crude mixtures from belladonna root and thorn-apple seed examined by the author, and mostly prepared by him, the larger proportion of each sample consisted, as mentioned above, of atropin. The remaining and smaller portion which was much more difficult to crystallise, consisted of hyoscyamin and probably other bases, and their decomposition products. The relative proportions would appear, however, not to be constant, otherwise it would be difficult to reconcile with this experience Ladenburg's statement that in *Datura Stramonium* he found the light alkaloid, hyoscyamin, to preponderate. The author mentions that under both the names "atropin" and "daturin" he has met in commerce with beautifully crystallised specimens of alkaloid that proved to be chemically and physically identical.

As therefore the investigation of Ladenburg does not, any more than that of the author, connect the name "daturin" with a particular chemical individuality, the author thinks it desirable, in order to avoid doubt and error, that this name should be dropped out from chemical literature and prices current, and that the alkaloids should be described by the names agreeing with their chemical characters. Consequently, leaving out of the question hyoscin, which Ladenburg found in the henbane together with hyoscyamin, Herr Schmidt would provisionally characterise only two plant bases having a mydriatic action—atropin, melting at 115° – 115.5° C., and hyoscyamin, melting at 108.5° C. Duboisin is, according to Ladenburg, in the pure condition, identical with hyoscyamin, and the belladonnin of Hubschmann and of Kraut is probably a mixture of atropin with oxyatropin (Ladenburg and Roth). Should it be desired to differentiate between chemically identical atropin according to its origin, it would be simply to make a

distinction between an atropin from *Atropa Belladonna* and one from *Datura Stramonium*, but not between atropin and daturin.—(*Pharm. Journ.*, July 12, 1884, from *Arch. d. Ph.*)

Presence of Organic Bases in Commercial Amylic Alcohol.—The following observation demands attention in connexion with recent investigations and controversies regarding *ptomaines*—i.e., organic bases derived from putrefying organic matter, and suggests caution in drawing conclusions. M. Haitinger, while searching for alkaloids in an article of food, obtained, by extraction with amylic alcohol, a small quantity of a deliquescent hydrochlorate, not presenting any of the reactions of the known poisonous alkaloids. Struck with the idea of examining the purity of the solvent employed, he ascertained that the amylic alcohol of commerce generally contains a small amount of basic substances, about 0·04 per cent., sometimes even 0·10 per cent. There is no difficulty in isolating the basic body, by distilling with potash the alcohol acidulated with hydrochloric acid.

In the majority of cases the author has succeeded in identifying the base so obtained with *pyridin*. Several explanations are possible as to the mode of formation of these basic substances. They may arise from a peculiar fermentation of albuminoids, or of the yeast, for example, by a *nitrous* fermentation. Or, again, the new bases may be decomposition products of more complicated alkaloids which are contained in small quantity in the plants which serve in the fabrication of the alcohol.—(*Rép. de Pharm.*, Mai, 1883, from *Monit. Scient.*)

PHYSIOLOGICAL ACTION OF UVA URSI.

Dr. Lewin, of Berlin, has been induced to investigate the pharmacology of uva ursi from a desire to determine the precise principle to which the action of this drug, which has for over 100 years been employed in medicine, is due, and the changes which it undergoes in the system. Bright recommended the drug as a diuretic in the disease to which his name has been given, and now specific properties are claimed for it in catarrh of the bladder. Wherein lies this therapeutic property? The leaves yield tannin, gallic acid, urson, and the glucoside arbutin. The therapeutic properties of urson are not to be considered, inasmuch as this substance is not soluble in either water, dilute acid, or alkalies. Arbutin is soluble in water, has a bitter taste, and is decomposed by boiling with acids into sugar, methylhydrochinon, and hydrochinon. It does not ferment

with yeast. It possesses the property of rotating the plane of the polarised ray to the left. A decoction of the leaves of *uva ursi* rotates, according to its strength in arbutin, the plane of the polarised ray to the left. The hydrochinon is optically inactive. The latter is obtained from the leaves as follows:—

Infusion of the leaves was precipitated with basic acetate of lead, the filtrate freed from excess of lead by means of sulphuretted hydrogen, and the resulting concentrated filtrate boiled for some time with dilute sulphuric acid. From the resulting dark-brown solution ether separates hydrochinon, which, on evaporation of the ether, is deposited in beautiful crystals.

There are two possible methods in which the leaves of *uva ursi* may act—namely, through the arbutin or the tannic acid which they contain. Lewin has established by experiments the action and disposition of arbutin in the animal organism. It is manifest from these experiments that when arbutin is introduced into the system, either hypodermically or by the mouth, it is split up—a process which is demonstrable outside of the body—by boiling. There appears in the urine a substance which, on a brief exposure to air, changes to an olive-green or brownish colour. This substance is hydrochinon, as may be demonstrated to a certainty. These changes are also observed in the urine of man after the exhibition of *uva ursi* leaves. At first the urine is of a bluish-green colour, but after standing from twelve to twenty-four hours, it becomes of a somewhat darker green; then olive-green, and later brownish-green. It also happens that that which, when voided, is of a greenish-brown, afterwards becomes of such a dark green as to lose its transparency. With the onset of the dark discoloration the acid reaction of the urine diminishes, and it finally becomes alkaline.

The chemical process of this is as follows:—The arbutin is converted into hydrochinon, and the latter is in turn converted into sulphate of hydrochinon. On standing exposed to the atmosphere the hydrochinon sulphate may, through the gradually growing alkalinity of the urine, be split up and the free hydrochinon further oxidised into products not definitely known. When the urine has already become alkaline in the bladder the process above described takes place in the bladder, and the urine is voided of an olive-green colour. But the whole quantity of arbutin taken into the system is not decomposed into hydrochinon and sugar. A portion is voided unchanged in the urine.

Arbutin is not poisonous. It does not, through splitting up, set

free in the body a sufficient quantity of hydrochinon to have a poisonous action.

As touching the action of uva ursi leaves and their different medicinal preparations, in the human being and lower animals, it appears that the chemical changes are identical. In these experiments is also usually observed a progressive dark discoloration of the voided urine, proportioned to the amount of hydrochinon which is traceable. This is, however, not always the case, as has been taught in practice. It is to a secondary degree dependent upon the size of the dose administered. It is to a greater degree influenced by the condition of the urine. When uva ursi leaves are administered in vesical catarrh, attended by an ammoniacal condition of the urine, the latter is discolored to a greater or lesser degree. The rotation of the polarised ray to the left shows also the presence of unchanged arbutin in such urine.

With these results as a basis, it is not difficult to establish the fact that the substance to which uva ursi leaves owe their reputation for specific action in vesical catarrh is *hydrochinon*. An auxiliary, although as compared with hydrochinon an insignificantly small action, is due to tannin, which is contained in the decoction of uva ursi leaves, and is voided in a very small amount in the urine.

Hydrochinon possesses antizymotic and antiseptic properties in even a one per cent. solution. Urine which had been voided after the administration of uva ursi leaves remained fresh, even after standing in the open air for two weeks, while that subsequently voided rapidly decomposed.

Hydrochinon possesses, particularly when it has become dark in solution, an irritating property. This irritation is, however, directly beneficial in catarrhal affections of the mucous membranes, which become turgid thereby, and have set up in them reparative action.

It is, therefore, to the antiseptic and irritating property of hydrochinon that the therapeutic action of uva ursi leaves is due.

It follows from this that much larger doses of uva ursi should be given than have heretofore been customary, inasmuch as even if the decomposition of one gram of arbutin into hydrochinon and sugar were complete, which is never by any means the case, the amount of hydrochinon which would thus be generated would be too small to secure the most beneficial local action on the bladder. In addition to this is the fact that the amount of arbutin contained in uva ursi leaves is very small. It is recommended, therefore, that when uva ursi leaves are administered, a decoction of from 30 to 80 grams in

180 grams of menstruum should be given. The objection which the large amount of tannin might interpose to the administration of such a decoction can be overcome by agitating it with charcoal:—

R. Decoct. fol. uvæ ursi, 30—80: 180 grams.

Agita c. carbone vegetabil., q. s. ad remov.
acid. tannic.

Filtra. S.

For this purpose I should regard the substitution of arbutin for the decoction as an improvement, should arbutin in the future take the place of the leaves themselves in medicine. Arbutin may be ordered in the form of powder or in solution; for instance:—

R. Arbutini - - - - 1·0 gram.

Sacchari - - - - 0·5 gram.

M. Ft. pulv.

Or,

R. Arbutini - - - - 5—10·0 gram.

Aquæ destill. - - - - 100·0 gram.

M.

It may also be given hypodermically.

Clinical experiments have in the meantime demonstrated the fact that arbutin is a valuable therapeutic agent.—(*Pharm. Journ.*, Dec. 22, 1883.)

BISMUTH BREATH.

Dr. W. Reiser reports some interesting observations upon this point, viz.:—

Bismuth oxynitrate, when taken into the human system, often imparts to the breath a very perceptible and disagreeable garlic-like odour, which is very annoying, not only to the person who has taken the salt, but particularly disagreeable to the persons with whom he may come in contact. This odour has been attributed by writers to be caused by impurities in the bismuth salt, such as arsenic and tellurium, and some have asserted that the chemically pure bismuth salt itself produces the odour. The subjoined experiments will add to the already known facts concerning the cause of the production of this odour—namely, the ingestion of tellurium, which element occurs as an impurity in many samples of bismuth oxynitrate.

Chemically pure sesquioxide of bismuth was prepared by dissolving the commercial oxynitrate in chemically pure nitric acid, and precipitating with an excess of water. This operation of redissolving

and reprecipitating was repeated twice, and the precipitate was then strongly heated in a porcelain crucible to convert it into bismuth sesquioxide, and at the same time to volatilise any arsenic which might have been contained in the substance. Tests for arsenic and tellurium in the resulting sesquioxide failed to denote their presence.

The bismuth sesquioxide thus purified was administered to five persons under the same, and under different conditions as to dose and time. From 0.5 to 1.0 gram was given three times daily for six days. No garlic-like odour could be recognised in the breath.

To investigate the action of arsenic in the production of this odour in the breath, arsenious oxide was taken by myself, in doses of 0.003 gm. after each of the three daily meals for three days. On the fourth day, on account of the griping pain produced in the abdomen, and a violent diarrhoea, only two doses were taken. There was not the slightest garlic-like odour perceptible in the breath.

Tellurium is comparatively rare, and is contained in many of the ores of bismuth. The mineral tetradymite contains as much as 49.79 per cent., wehrlite 29.74 per cent., and joseite 15.93 per cent. of the element. In a sample of metallic bismuth from Bolivia, Schneider found 0.14 per cent. of tellurium. Brownen found tellurium in the commercial bismuth oxynitrate, but it was not present in large quantity. On account of difficulties in its separation from bismuth, it often occurs as an impurity in the commercial bismuth oxynitrate, yet in most cases the quantity present is very minute. If more care were used in the preparation of the commercial oxynitrate, less would be heard of the so-called bismuth breath. Repeated precipitation and washing will entirely remove the obnoxious element.

As early as 1824 the odour produced by the ingestion of tellurium compounds was noticed by Gmelin.

In 1853 Hansen investigated the cause of the production of the odour. This investigator experimented upon himself and a friend, and upon dogs, with potassium tellurite. This salt, in doses of 0.030 to 0.080 gm., taken by himself an hour before each meal, gave the garlic-like breath within a few minutes after the first dose, and this odour soon became so strong that he had to seclude himself from society. He continued the doses during seven days, his friend continued the doses for two days with similar effect, and noticed the odour in his breath for eight days afterwards.

It is also stated that Wöhler, when investigating the volatile

telluride of ethyl, noticed this same odour in his breath, and one night, when perspiring freely, the odour of the perspiration was almost unbearable. In the experiments on dogs the garlic-like breath was perceptible after one minute. Hansen quotes Gmelin as having in 1824 given tellurous acid to a dog and a rabbit. The rabbit only was killed, and on dissection gave off a garlic-like odour.

Sir J. Simpson records a case in which a divinity student inadvertently swallowed a dose of tellurium, which was followed by the evolution of such persistent odour that for the remainder of the session the patient had to sit aside from his fellow-students.

The experiments in this direction made upon several friends, and also upon myself, are as follows:—

Tellurous oxide (TeO_2) was prepared by treating metallic tellurium with nitric acid, evaporating to dryness and igniting the product. Some of the resulting tellurous oxide was taken by myself in doses of 0.005 gm. each. Three doses were taken on May 8, 1883, at 1, 4, and 7 o'clock p.m. In fifteen minutes after the first dose the breath had a strong garlic-like odour, and in an hour a metallic taste was observed. An hour after the second dose the urine and sweat had the garlic-like odour, which was also observed in the fæces on May 12. The metallic taste was observed for seventy-two hours, and the garlic-like odour in the urine for three hundred and eighty-two hours, in the sweat for four hundred and fifty-two hours, in the fæces for seventy-nine days, and in the breath it was still present, though very faintly, after two hundred and thirty-seven days.

In order to determine the smallest quantity of tellurous oxide which would be required to produce the garlic-like odour, the following solutions were made:—

I. 0.001 gm. of tellurous oxide was dissolved in potassium hydrate and sufficient distilled water to obtain 100 cubic centimetres; 5 c.c. contain 0.00005 gm. tellurous oxide.

II. 0.00025 gm. of tellurous oxide was dissolved with the aid of a little hydrochloric acid in sufficient distilled water to make 100 c.c.; 5 c.c. are equal to 0.0000125 gm. of tellurous oxide.

III. Made like the preceding, but diluted to 200 c.c.; 5 c.c. are equal to 0.00000625 gm. tellurous oxide.

IV. 0.0001 gm. tellurous oxide, sufficient hydrochloric acid and water to measure 100 c.c.; 5 c.c. are equal to 0.000005 gm. tellurous oxide.

V. Like the preceding, but diluted to 500 c.c.; 5 c.c. are equal to 0·000001 gm. tellurous oxide.

VI. 100 c.c. of solution V. was diluted with 100 c.c. of distilled water; each c.c. represents 0·0000001 gm. tellurous oxide.

These solutions were given to a number of young men, but no one was experimented upon a second time.

I. After one dose of 5 c.c. of this solution, the garlic odour became perceptible in the breath in thirty-five minutes, and lasted about seventy-five hours.

II. Three doses of 5 c.c. each were taken after three succeeding meals. The odour was noticed in the breath thirty minutes after taking the third dose, and continued about sixty-six hours.

III. Five doses of this solution of 5 c.c. each were taken after five succeeding meals, when the odour was soon noticed, and lasted about ninety hours.

IV. After six doses of 5 c.c. each, the odour was quite distinct; three additional doses were taken, and the odour lasted ninety-six hours.

V. Five doses of 5 c.c. each were taken after five consecutive meals; the odour was noticeable in forty-five minutes, and lasted seventy-three hours.

VI. After one dose of 5 c.c. the garlic odour was perceptible in seventy-five minutes, and lasted about thirty hours.

Smaller quantities of this solution were then given—namely, 1 c.c. to each of two young men, 2 c.c. to two persons, and 3 c.c. each to three persons, but no garlic-like odour could be detected.

The nature of the compound which possesses this garlic-like odour is, as yet, not understood, although Hansen attributes the odour to a volatile organic compound of tellurium like the telluride of ethyl, which is given off by the lungs and skin. Both methyl and ethyl telluride have a garlic-like odour.

In this investigation the breath of myself, which was exceedingly strongly impregnated with the garlic-like odour, was for several hours passed through a tall column of distilled water contained in a wash bottle, and the water afterwards tested for compounds of tellurium, but not even a trace of this element could be found. However, from the minute quantity of the element which is required to produce this odour, one would hardly expect to find by qualitative testing even the merest trace of the element in the breath. Necessarily, the presence of tellurium in such a minute quantity in the great majority of samples of the bismuth oxynitrate would prevent its

detection by any of our chemical tests. From this failure to detect tellurium most likely have arisen the many statements of its non-presence in the commercial bismuth oxynitrate. The physiological test seems to be the most delicate, as it has been shown that in this way as little as 0·0000005 gm. or $\frac{1}{143000}$ of a grain of tellurous oxide, equal to 0·0000004 gm. or $\frac{1}{168000}$ of a grain of the metal, may be detected.

In these experiments idiosyncrasy seems not to have had any influence at all. Every one to whom the tellurium compound was administered in sufficient quantity was affected with the garlic-like odour.—(*Pharm. Jour.*, May 3, 1884, from *Amer. Jour. of Pharm.*)

CANTHARIDIN AND ITS USES.

E. Dietrich, manufacturer of plasters, dressings, &c., in Helfenberg, advocates the abandonment of cantharides as an ingredient in blistering tissues and the employment in its place of the active principle cantharidin.

The best solvent for this principle is formic acid, which itself occurs in cantharides; the stronger the acid the greater is its solvent action.

If cantharidin is to be dissolved in collodion, oil, or the mass of the plaster, it is advisable to rub it first to a very smooth paste with oil. In this shape it is soluble in collodion by mere shaking; in oil and plaster it dissolves on being heated for half an hour to 80° C. (176° F.)

Cantharidal Collodium.

Cantharidin,	-	-	-	-	-	$\frac{1}{20}$ gr.
Collodion,	-	-	-	-	-	15 gra.
Rape oil (as colouring),	-	-	-	-	-	$\frac{3}{4}$ gr.

Ordinary Cantharidal Plaster.

Cantharidin,	-	-	-	-	-	$\frac{1}{16}$ gr.
Suet,	-	-	-	-	-	3 grs.
Yellow wax,	-	-	-	-	-	12 grs.
Turpentine,	-	-	-	-	-	3 grs.

Perpetual Cantharidal Plaster.

Cantharidin,	-	-	-	-	-	$\frac{1}{64}$ gr.
Resin,	-	-	-	-	-	10 grs.
Yellow wax,	-	-	-	-	-	8 grs.
Turpentine,	-	-	-	-	-	5 grs.
Suet,	-	-	-	-	-	3 grs.
Euphorbium, powd.,	-	-	-	-	-	1 gr.

Cantharidal Oil.

Cantharidin,	-	-	-	-	-	$\frac{1}{20}$ gr.
Rape oil, -	-	-	-	-	-	15 gra.

Cantharidal Ointment.

Cantharidin,	-	-	-	-	-	$\frac{1}{8}$ gr.
Yellow wax,	-	-	-	-	-	45 gra.
Olive oil,	-	-	-	-	-	100 gra.

Unguentum Acra.

Cantharidin,	-	-	-	-	-	$\frac{1}{8}$ gr.
Yellow wax,	-	-	-	-	-	$1\frac{1}{2}$ gr.
Resin, -	-	-	-	-	-	3 gra.
Turpentine,	-	-	-	-	-	6 gra.
Lard, -	-	-	-	-	-	20 gra.
Euphorbium, powd.,	-	-	-	-	-	1 gr.

In all these cases the relation of cantharidin to Spanish flies is ample, about 1 to 200. In the case of some preparations, as the oil and ointment, loss is occasioned by heat, but this loss is made up by a proportionately larger quantity.—*Pharm. Zeitschr. f. Russl.*, from *New Remedies*, August, 1883.

COLLODION.

Mr. J. Barnes offers some practical suggestions respecting the extension of the use of collodion as a medium for the topical application of various substances. The advantages of combinations of collodion are that, unlike ointments, they remain fixed for some time to the part applied, and are cleanly. It remains, however, to be proved whether the remedial effects of the several substances in combination with it will be obtained; collodion must retard the action more or less of all of them, but at the same time it is reasonable to expect some of those under consideration may be found useful.

When wood tar is mixed in the proportion of 1 drachm by weight with 4 of collodion a perfect solution is effected, which, when applied to the body, dries quickly and leaves a smooth covering.

Coal tar collodion may also be prepared by mixing, in the same proportions, an alcoholic extract of coal tar of the consistence of syrup with collodion; it is fluorescent in appearance, and forms a good covering when applied to the skin. The addition of 30 grains

of iodine to the fluid ounce of either of these preparations does not affect its consistency or adhering properties.

Oleum picis juniperi, when mixed in the proportion of 1 by weight to 5 of collodion, dissolves and forms an application which, when applied to the skin, dries quickly, leaving a good covering.

Oil of gurgun, in the proportion of 1 by weight to 3 or 4 parts of collodion, also dissolves and forms a good varnish.

Oleic acid and Peruvian balsam, each in the proportion of 1 by weight to 4 of collodion, form good varnishes when applied to the skin, which require ether to remove them.

The following also form suitable combinations for painting on the skin, adhere firmly, and do not crack. Glacial acetic acid, 1 part by weight; flexible collodion, 4 parts; carbolic acid, in crystals, 1 part to 4 of flexible collodion; creasote, 1 part by weight to 7; and essential oil of mustard, 1 part by weight to 7 of flexible collodion.

Aconitia, atropia, hyoscyamia, and veratria, dissolve very readily in collodion, the latter alkaloid in the proportion of 8 grains to 7 fluid drachms of flexible collodion and 1 fluid drachm of oleic acid; when applied to the skin this combination leaves a smooth covering, which does not rub off.

Morphia does not dissolve in collodion, but when in combination with oleic acid it does; 5 or 10 grains in a fluid drachm of the acid with 7 drachms of flexible collodion form a covering which adheres firmly to the skin.

Oleate of mercury mixed with collodion in the proportion of 1 to 4, when extended on the surface of the body, leaves a smooth, almost transparent covering.

In the preparation of the oleate 1,320 grains of oleic acid were diluted with three volumes of ether; 420 grains of dry binocide of mercury were added, and the mixture shaken occasionally for four days until the orange colour of the binocide had disappeared, the white creamy compound was allowed to evaporate without the application of heat. The dilution of the oleic acid with ether prevents caking, the oleate of mercury so obtained is of a yellowish-white colour, of the consistence of vaseline.

Oleate of zinc mixed in the proportion of 1 part to 4 of collodion forms a convenient mixture for topical application.

Iodide of cadmium dissolves in flexible collodion, 1 drachm mixed with 7 fluid drachms of the collodion and 4 drops of castor-oil, gives a colourless bright solution, which, when painted on the skin, leaves a smooth white covering.—(*Pharm. Journ.*, Nov. 24th, 1883.)

IODINE IN COD-LIVER OIL.

A favourite theory to explain (!) the beneficial action of cod liver oil has been to attribute its virtues to the proportion of iodine it was asserted to contain.

Mr. Stanford, who is an authority upon iodine, has set himself to check the statement (Garrod) that cod-liver oil contains 0·06 per cent. of iodine.

If this statement were true cod-liver oil would be one of the richest sources of iodine with which we are acquainted. At present the marine algæ form the only commercial European source of iodine. The largest quantity of iodine found in the deep sea tangle or stems of *Laminaria digitata* amounts in the fresh plants to about 0·1 per cent. The quantity obtained when this plant is burned into kelp seldom reaches 0·05 per cent. The average yield from laminaria drift on the large scale is 0·025 per cent., but many thousands of tons of seaweed have been made into kelp and worked for iodine, which have not yielded more than 0·005 per cent., and some even less than this, so that we have to deal on the large scale with a material, and constantly to test samples, containing very small percentages of iodine.

Much difference of opinion has arisen amongst former observers with regard to iodine in cod-liver oil, and the statements of results are extremely conflicting, some chemists having failed to find iodine at all, others only in some specimens of this oil. Other chemists again have estimated the proportion of iodine as much higher than the quantity above indicated; and it has been assumed that this element represents an important factor in its medicinal value.

The following results have been published at various times by the authorities quoted:—

	Iodine per cent.
Dorvault found in cod-liver oil . . .	0·150
Raie found in cod-liver oil . . .	0·180
Joseph found nearly $\frac{1}{2}$ per cent. . .	0·487
Machenroden found . . .	0·162 to 0·324
Grager found in light brown oil . . .	0·0846
Dr. de Jongh found in pale oil . . .	0·0374
„ „ pale brown . . .	0·0406
„ „ brown . . .	0·0295

All these are extremely high and improbable.

Mr. Mitchell Bird (*Pharm. Journ.*, [2], i., p. 546) gives results of analyses of six varieties of cod-liver oil, which are much nearer what I believe to be the truth. The method and the results differ considerably from mine, although we are both agreed in the fact that we have found iodine in all the specimens examined.

The percentage results are as follows, the iodine being calculated as potassium iodide:—

	As KI	As Iodine.
1. Cod-liver oil, Norway . . .	·0021	
2. Cod-liver oil, Norway . . .	·0018	} average ·001775 ·001355
3. Cod-liver oil, Norway . . .	·0016	
4. Cod-liver oil, Norway . . .	·0016	
5. Cod-liver oil, Newfoundland . .	·0012	} average ·0013 ·000993
6. Cod-liver oil, Newfoundland . .	·0014	

In estimating the small quantities of iodine necessary in our analyses we are really limited to colour tests. I have long discarded starch, as it introduces an organic substance very liable to change, and in many circumstances unreliable. Moreover, in my hands it is not so sensitive as that with bisulphide of carbon. The solution is not perfectly transparent, and the indications not so sharp. The colour is spread over the whole liquid, and when dilute can be seen only by looking down the length of the tube, whereas in the bisulphide of carbon test it is removed out of the solution and concentrated in a sixth of the volume at the bottom of the tube. The comparison of the two methods is very marked. In testing a solution of potassium iodide containing only $\frac{1}{100000}$ th part of iodine, the maximal effect is immediate, and another advantage is that the iodine can be easily separated from its solution in bisulphide of carbon. We usually recover the latter by treating it with zinc in the presence of water.

In the first experiment the solution was tested at once. In the second the solution was neutralised with hydrochloric acid in the presence of the carbon bisulphide; no iodine was eliminated until the nitrosulphuric acid was added. In the third the solution was neutralised with hydrochloric acid before the addition of the test solutions. Little difference was noticed. The following six specimens were selected:—

No. 1. Cod-liver oil, pale.

No. 2. Cod-liver oil, Norway.

No. 3. Cod-liver oil, manufactured by Carr and Sons, Berwick-on-Tweed.

No. 4. Cod-liver oil, English.

No. 5. Cod-liver oil, Newfoundland.

No. 6. Light brown cod-liver oil.

The mean proportions of iodine found were, per cent.—

No. 1. 0·000410	} Mean percentage of iodine.
No. 2. 0·000434	
No. 3. 0·000276	
No. 4. 0·000138	
No. 5. 0·000315	
No. 6. 0·000360	
	0·000322.

I also estimated the iodine in fresh cod-liver; the fishmonger informed me that it is not yet in season, but the result is here appended. Five thousand grains were treated in the same manner as the oil. Having stated on a former occasion (B. Pharm. Conference, Liverpool) that the oil vomited by the fulmar (*Fulmaris glacialis*)* of St Kilda, and which, though obtained from a bird, has the reactions of a fish-liver oil, contains iodine, I have also estimated this amount. Five thousand grains were treated in the same way as the cod-liver oil.

Cod-liver oil dragées are stated to be made of cod-liver from which the oil has been removed; an analysis of these is also appended. One thousand grains or 173 of the dragées were employed saponified and with 200 grains of caustic soda. These are extremely rich in iodine, and would form a valuable source of that element if they can be procured cheap enough to contend with the present low prices. I notice, however, that a box of 250 dragées sells at 5s., and is considered (by the maker) to be equal to 6 pints of oil, so that the quantity employed would be equal to 83 ounces or 36,312 grains, or about seven times the quantity of oil used in the other experiments. It contains one hundred and eighty-seven times the proportion of iodine.

	Per cent.
Fulmar oil contains iodine	0·000095
Cod-liver fresh contains iodine	0·000817
Cod-liver oil dragées contain iodine	0·056366 ^b

It will be noticed that the fresh cod-liver contains more than double as much iodine as the mean percentage in the oil. Mr. Gate has kindly sent me an estimate of the yield from his expe-

* Pharmaceutical Journal, Nov., 1870.

^b In the published analysis of these by Professor Garreau the iodine is estimated at 0·154 per cent.—i.e., richer than any other known organic substance.

rience of ten years' average of oil from cod-liver; it is about 45 per cent., taking the best time, December. The inference is that the liver without the oil would contain a much higher percentage of iodine, as shown indeed in the dry dragées. And I shall not be surprised to find as much in the fish. This point is under investigation.

Scotch herring has been said by "Jonas" to contain iodine, and this is also under investigation.

This morning I have received the results of the analysis of fresh cod, herring, and herring brine:—

5,000 grains of fresh cod were
treated with . . . 500 grains caustic soda.

5,000* grains of salt herrings
were treated with . . . " "

5,000* grains of herring brine
were treated with . . . " "

Fresh cod fish contained .00016 per cent. iodine dry = .000829.

Scotch herring salted contained .00065 per cent. iodine.

" brine " .00012 " "

The cod fish contained 80.7 per cent. water.

In the fresh cod fish the analyst for the first time in these experiments was troubled with a large quantity of sulphides, and in this case only was not satisfied with the indication from 500 grains measure, and was obliged to use the larger quantity.

It will be seen that the herring contains four times the amount of iodine contained in the cod fish, and more than in any of the samples of cod-liver oil; if, therefore, the iodine be the medicinal element, you should recommend Scotch herring salted; it is very cheap at present.

I find the subject becoming interesting, and, indeed, alarming to the iodine maker, and intend examining other varieties of fresh fish, for I expect to find iodine in all, and, if so, every man who eats fish will become his own iodine eliminator. Specimens of true genuine unmixed whale, seal, and bottle-nose oil have been sent me by my friend, Captain John Gray, a celebrated Peterhead whaler, to whom the Arctic regions are a kind of "Winter Garden," and these are under examination, but I cannot yet report the results.

Since the publication of the paper, the following results have

* Two determinations were made, one with 500 grains and another with 4,500 grains, and the mean taken.

been obtained, the respective oils having been treated in the same manner as the cod-liver oil:—

	Per cent.
Whale oil, cold drawn, contains iodine . . .	·00001
Bottle-nose „ „ . . .	·00010
Seal „ „ . . .	·00005

—(*Pharm. Journ.*, Nov. 3, 1883.)

CROTON OIL—ITS PURGATIVE PRINCIPLE.

Notwithstanding several attempts to determine the active ingredient, if any, of croton' oil, the question has not yet been definitely answered. Mr. Harold Senier has lately addressed himself to the problem, and appears to have succeeded in narrowing its limits. In 1878 Mr. Senier pointed out that English-pressed croton oil of undoubted genuineness could be separated by alcohol into two parts. *The part soluble in alcohol contained the vesicating principle, while the part insoluble in alcohol was entirely non-vesicating.* With respect to the other prominent property of croton oil, its purgative activity, he at that time was led by the opinion of therapeutists to believe either that this action was due to the vesicating principle or that it resided in the same portion of the oil—that portion soluble in alcohol; this, however, was not then determined. He now finds that the purgative constituent does not exist in the alcohol-soluble vesicating oil, but is entirely in the alcohol-non-soluble, non-vesicating oil. This was determined in the first place by experiments on himself and others, and more recently the therapeutic action of this oil has been studied by Dr. J. W. Meek. Mr. Senier's experiments consisted first of the administration of the non-vesicating oil in doses of $\frac{1}{10}$ minim, increased to $\frac{1}{2}$ minim; if this oil contained the whole of the purgative principle, this quantity would be equivalent to about $\frac{1}{3}$ to 1 minim of commercial croton oil. The oil used in these experiments was carefully freed from traces of the vesicating oil by repeated washings with alcohol until nothing more was dissolved. It was administered in the form of pills, and magnesium carbonate and extract of hyoscyamus proved convenient excipients. The general results from these experiments were, briefly, from the smaller doses a mild, and from the larger doses a powerful, purgative effect, unaccompanied by any unpleasant symptoms. He supplemented these experiments by the administration of similar doses of the vesicating oil under similar conditions and obtained

no purgative action, but a considerable amount of irritation in the alimentary canal accompanied by nausea.

Dr. Meek describes the result of the experiments conducted by him as follows:—Given to healthy adults in doses containing the non-vesicating portion of one-tenth of a minim of ordinary croton oil, beyond slight nausea and some sense of discomfort no appreciable effect was produced; but he found that doses containing the non-vesicating portion of half a minim of croton oil acted as a powerful purgative in from three to six hours from the time of administration. In some of the cases the oil caused griping, but not in all. The motions were usually of a loose character, though not containing a large amount of fluid. The bowels were usually opened two or three times at intervals of an hour or more between each action.

In the doses above mentioned, beyond the action on the alimentary canal, no other physiological effect was observed in any of the cases.

As the result of additional experiments Mr. Senier concludes that the vesicating activity of the alcohol-soluble croton oil resides in the combined non-volatile fatty acids, and not in the free acids in the oil (*Pharm. Jour.*, Dec. 8, 1883). Mr. Smiley confirms Mr. Senier's results.—(*Pharm. Jour.*, June 14, 1884.)

CONVALLARIA MAJALIS (LILY OF THE VALLEY).

The following remarks from the pen of Dr. Squibb will be read with interest; and his pharmaceutical suggestions, coming from so high an authority, deserve respectful attention:—

There is evidence that convallaria has been used in medicine for several hundred years, and that its action on the heart has been long known. But its more modern and rational use in medicine dates from a paper by Professor G. Sée in 1882. This paper attracted considerable attention, and was followed by others in France, Great Britain, and America. All agreed upon the potency of the drug as a cardiac agent. Some regarded it as an equal, and others as an inferior duplicate of digitalis. Some found it diuretic, others not at all so, while in a very considerable number of the trials the results were negative until toxic doses were used. Long ago it had yielded to chemistry two glucoside principles of very different and somewhat antagonistic action, and these, convallarin and convallamarin, were used separately, and the latter was alleged to be the cardiac agent, but with these also discrepant results were

obtained. In a year from the time of Professor Sée's paper it seemed doubtful if the convallaria was not a mere duplicate of digitalis, with the great disadvantage of being by no means so well studied or so well tried, yet stimulated into use by fashion and novelty, and by advertising.

If only a simple duplicate of digitalis, the already overloaded materia medica was much better without it. But if it differed materially in either quality or quantity of action, and was more free from collateral disturbance, the materia medica could not afford to lose the chances offered by it.

At about this period of its career Dr. Squibb received a note from a very close and careful observer, saying that he considered it a valuable agent, which could not take the place of digitalis in his hands, but which had a place of its own to which digitalis had been applied, but to which it is less applicable, and asking the writer to make a preparation of convallaria for critical trial. This was in the early spring of 1883, and there was no part of the plant to be had in the American market. From the character of the plant, and from various considerations developed by the uses of the extract from its various parts by M. Hardy and others, the writer concluded that the root, if taken at the proper time, would be by far the best portion of the plant for medicinal use, and that a well-made fluid extract of the root would be the best representative of the drug—much better than the so-called active principles which, when divorced from each other, were found to yield such discordant results.

A florist was found who had some fine beds under cultivation, and when the roots had fairly sprouted they were taken from the ground, cleaned and dried by a gentle radiant heat. In drying they lost just about 75 per cent. of their weight, this loss not varying more than 1 to 2 per cent. in four separate parcels. The dried root and sprouts were then ground so as to pass through a sieve of twenty meshes, and were made into a fluid extract which represented the dried root minim for grain.

As a rule, cultivated plants are not as active, medicinally, as wild ones, but this was the best that could be done. The menstruum used for exhausting the root at first proved not to be a good one, and yet this fluid extract, in the hands of several good observers, proved moderately effective, and some discrepancies in the published statements were shown to be probably due to the use of preparations of different makers, or of different materials.

Specimens of this fluid extract were sent to several good observers, and in course of a few months results were obtained which, although not fully sustaining the character of the drug, were yet sufficient to warrant a more extended usage. By this time a parcel of foreign wild flowers and flower stalk had arrived. These were made into fluid extract with a different and better menstruum—namely, the diluted alcohol of U.S.P. of 1880. It was, however, pretty plain from the sensible properties that this was not so active nor so good a preparation as that from the root, and therefore that the root collected at sprouting should be preferred. A very few therapeutic trials seemed to confirm this opinion, and by this time some foreign root arrived, was made up and distributed, and the supply of this has now been kept up for several months to all who applied for it, thus gradually extending the number of those who were using this preparation, and adding them to the much larger number of those who were using the preparations of other makers, and who had used these long before this writer took up the subject.

Up to this time several competent and careful observers—free from the prejudice of novelty, and from the still more dangerous prejudice of basing general conclusions upon too few cases—have reported their experience in a guarded way. This experience is still discrepant, and therefore difficult to state, so that perhaps all that can be safely said is that the general kind and direction of the results show that *convallaria* is worthy of a more extended use before it can be either fully accepted or discarded. It may be pretty definitely said that it is not a simple duplicate of *digitalis*, nor is it adapted to supersede that important agent in any large number of cases. Yet its use may serve to differentiate or discriminate between cases which have hitherto been classed together and all treated by *digitalis*, because there was no other agent that was applicable to any of the class.

If the uncertain indications from the use of *convallaria* thus far be not mistaken, the best that can be hoped from it is that it may materially aid physicians in splitting up the *digitalis* class into groups, some of which may be better managed by *convallaria*. It is also among the possibilities, if not among the probabilities, that it may prove either or both a substitute and adjunct to *digitalis*. There are many conditions in which *digitalis* fulfils all the indications required of it, but in which it cannot be continued in sufficient doses to maintain the good effects without disturbing the stomach, and thus interfering with nutrition. In such, or in some

of such cases at least, it may serve as a substitute or alternate. In other conditions which seem to indicate the effects of digitalis, but in which that agent does no good, or cannot be tolerated, convallaria gives a chance of relief where there may have been less chance without it.

Two or three years of careful observation, in good hands, extended over large numbers of cases, without prejudice, and with earnest investigation, will be absolutely necessary to establish the true and lasting character of convallaria, and it is this consideration which induces the writer to add his supply of a well-made fluid extract from good material to those of other makers who long preceded him in supplying it.

The dose of convallaria is, of course, the quantity which will give the special or physiological effect, and this will be different in different cases. But the dose to begin with, and that which will be effective in some cases, is about 24 grains in the twenty-four hours. And as the fluid extract represents the drug minim for grain, the dose of that will be as many minims—say 6 minims every four hours, or 8 minims three times a day—the size or the number of the doses to be increased until some effect is obtained.

The fluid extract is miscible with water, and though it does not make a clear solution, the precipitate which settles out is probably but not certainly inert. A good way to administer it is to put a measured quantity in a wine glass and add as many teaspoonfuls of water as may make up the number of doses required when given from the same teaspoon. For example, a fluid drachm is measured into a wine glass, and seven teaspoonfuls of water, or wine, or diluted alcohol are added and the mixture well stirred. Then using the same teaspoon, and stirring well at each dose, if water be the diluent, it is given in teaspoonful doses, which will be nearly eight minims each, further diluted if desired at the time of taking it.

If the drug is to have a fair chance, there can be very little doubt that a well-made fluid extract of the root collected at the proper season is the best form in which to use it. In all drugs, the active principles of which are neither alkaloids nor acids, but are of that indefinite class called glucosides for want of a better generic name, it is pretty certain that these glucosides do not fully represent the drugs—nor even well represent them. And when two or more glucosides are obtained from the same drug, the doubt is much strengthened. No one knows—be he ever so good a chemist—where the molecules of complex organic substances will

split until he tries them, and therefore what he gets is often empirical, and may be the result of his chemical process, so that a different process may give different results. For example, Walz, in 1858, obtained from *convallaria* two glucosides which he named "convallarin" and "convallamarin." Dilute acids again split both of these into other bodies by subtracting a molecule of sugar, and one of the resulting bodies, *minus* half a molecule more of sugar, leaves the formula of the other original glucoside. Hence the inference that neither convallarin nor convallamarin exists in the plant, but that they are the result of the splitting-up of more complex molecules by chemical means. No one has ever proved that either of them pre-existed in the plant, while the physiological action of the plant is not represented by the action of the two glucocides as given.—(*Pharm. Journal*, March 15th, 1884, from *Ephemeris*, Jan., 1884.)

CONVALLAMARIN AND CONVALLARIN.

The following characteristics of the two active principles (glucosides) discovered by Walz, in 1858, in *Convallaria majalis* L., have been drawn up by the well-known manufacturing house of E. Merck, of Darmstadt:—

Convallamarin.

White, crystalline power.
Taste persistently bitterish sweet.
Easily soluble in water and alcohol.

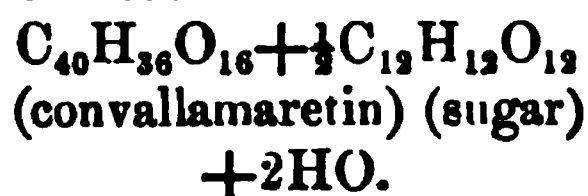
Insoluble in ether and chloroform.

When boiled with diluted acids, or with solution of potassa, it splits into *convallamaretin* and sugar.

Formula (acc. to Walz):^a



Splits into:



Convallarin.

Rectangular crystals.
Taste scratching.
Easily soluble in alcohol.

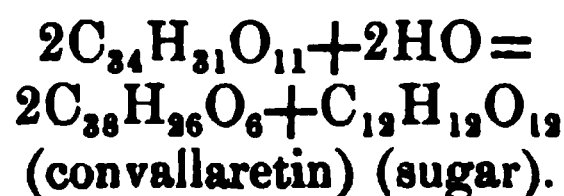
Insoluble in ether. Water dissolves but very little, but the solution foams on shaking.

When boiled with diluted acids, or with solution of potassa, it splits into *convallaretin* and sugar.

Formula (acc. to Walz):



Splits in this manner:



^a Old notation.

Effects, according to Marmé: In small doses, emetic and acting upon the heart like digitalis. (The action of the heart is arrested in large dogs by injections of 15 to 30 milligr. ($\frac{1}{8}$ to $\frac{3}{8}$ grain); in cats by 5 milligr. ($\frac{1}{16}$ gr.), and in rabbits by $\frac{6}{8}$ milligr. ($\frac{1}{10}$ to $\frac{1}{8}$ grain).

Effects, according to Marmé: Purgative.

Up to the present no precise statements of dose have been made with respect to convallamarin, which is evidently the active principle in the extract.

Convallarin does not appear to be of any value.—(*New Remedies*, April, 1883.)

THE OLEATES IN CUTANEOUS DISEASES.

The advantages to be derived from the use of metallic oleates externally have recently been prominently advocated, and Dr. Henry Stelwagon, of Pennsylvania, has published a judicious account of these salts and their uses, which appears to be deserving of reproduction. Attention was first directed to the existence of oleic acid about 1811, by Chevreul, and some mention of the oleates may be found in the pharmacy of France at that time. The earliest English paper on the subject was by Attfield, in 1862.^a It was not until the paper by Mr. John Marshall^b was published, in 1872, that much interest was awakened in the subject. Since that time several communications on the oleates, both as regards their pharmacy and therapeutics, have appeared in the current medical literature.^c

The oleates must be looked upon as valuable additions to our means of treating diseases of the skin, and although they do not answer in all cases, or supplant the older and tried methods of dermic medication, yet they have proven of such value in a number of instances as to warrant their further trial and experimental use.

^a *Pharmaceutical Journ. and Trans.*, 1862-3, Vol. IV., p. 388.

^b *Lancet*, May 25, 1872, p. 709.

^c Crocker, *Medical Record*, 1879, p. 123; Wolff, *Amer. Jour. of Pharmacy*, Jan., 1879, p. 8; Nov., 1883, p. 445; Shoemaker, *Trans. Penna. State Med. Soc.*, 1879, p. 707; *Medical Bulletin*, July, 1882, p. 584; Squibb, *Ephemeris*, No. 6, Nov., 1882, p. 152.

There are two methods of preparing the oleates, each of which has its advocates. The older method is by the direct combination of oleic acid with the base. The new method is by double decomposition, the oleate of sodium with a neutral metallic salt. Unquestionably the preparations by the latter method are, in appearance at least, superior to the older oleates; in regard to the therapeutical effects, they are also probably better, although excellent results may be secured with the preparations made by the older method. It is highly probable, however, that the method of manufacture by double decomposition will entirely supplant the old process.

The oleates, whether made by the direct combination of the acid with the oxides, or by the process of double decomposition, are fixed salts, and the designations of five per cent., ten per cent., &c., oleates, are misnomers, and wholly incorrect. The so-called per cent. oleates are solutions of the oleates in free oleic acid—for example, the so-called ten per cent. oleate of mercury is so named for the reason that ten parts of mercuric oxide are added to ninety parts of oleic acid, and combination allowed to take place. The oxide, however, only requires a certain proportion of the ninety parts of the oleic acid for the production of the oleate, so that there must be a considerable quantity of the acid which is not needed for the combination—in other words, the so-called ten per cent. mercuric oleate (and the same applies to the other per cent. oleates) is a solution of the oleate in free oleic acid.

It will be readily seen that this manner of speaking of the oleates, therefore, is not only misleading, but erroneous, and should be discarded. If a diluted oleate is required for application, it may be ordered in the same manner that all dilutions are prescribed—so much of the oleate and so much of the diluent.

Oleate of Mercury.—In colour yellowish, somewhat adhesive, and of the consistence of ointment, with an oily odour. If pure, diaphanous and of a yellow colour, but generally found of a grayish or greenish hue, showing the separation of mercurous oxide and metallic mercury, which will be found ordinarily at the bottom of the vessel containing it.

Applied to the sound skin, this oleate produces more or less redness and irritation, and if its use is continued, may cause a dermatitis. It is rarely prescribed in full strength, but usually one part to from one to three parts of oleic acid or lard. One part of this oleate to two parts of oleic acid will give a preparation about similar in strength to the so-called ten per cent. oleate. Of all the oleates,

this is not only the most important, but one that has been long in use.

It has its principal field in the treatment of syphilis by inunction, and when employed for such purpose is efficient and cleanly, completely supplanting the old method of inunction by blue ointment. For this purpose, the oleate should be diluted with oleic acid, lard, or a combination of the two. A prescription made up as follows will answer admirably:—

R. Hydrargyri oleatis,	-	-	-	3 iij.
Acidi oleici,	-	-	-	3 ij.
Cerati simplicis,	-	-	-	3 iij.

Ft. ungt.

A portion of this ointment, of the size of the terminal joint of the forefinger, suffices for an inunction. For each application a new surface should be selected. As the oleate ointment is more irritating than the old mercurial ointment, and as it is also more readily absorbed, less friction should be employed, and the hairy and more delicate portions of the skin should, as far as possible, be avoided.

For all syphilitic eruptions, ulcerative or non-ulcerative, and especially the later and localised manifestations, the local use of an ointment of this oleate is an excellent adjuvant to the constitutional treatment; it should be applied and gently rubbed into each lesion. The ointment given above may be used; ordinarily, an ointment made up of one part of the oleate to four parts of benzoated lard will be found sufficiently active.

Another disease, in some cases of which this oleate seems to act almost as a specific, is chronic ringworm of the scalp. As a rule, it is, I think, more reliable than any other remedy, failing at times in obstinate cases, as do all other remedies, but in the majority of instances curing. In recent cases, a twenty per cent. ointment or solution will be effective; if the disease has existed a long time, a thirty or even forty per cent. ointment may be employed. It is to be well rubbed in twice daily, and the head to go unwashed for a week or longer. Treatment, if it is to be permanently successful, must be continued for several months. Epilation, as in all other plans of treatment, is to be persistently practised. A combination which will be found useful in these cases is the following:—

R. Hydrargyri oleatis,				
Picis liquidæ,	-	-	-	āā 3ij.
Ungt. sulphuris,	-	-	-	3 iv.

Ft. ungt.

It is to be applied morning and evening. As there is a tendency to chemical change, a quantity sufficient for a week or two only should be made at one time.

In all skin diseases in which ointments of red precipitate, white precipitate, and calomel are employed, this oleate, properly weakened, may often be substituted with advantage.

All indurations, swellings, and glandular enlargements, may occasionally be favourably influenced by applications of a mild solution or ointment.

In pediculosis capitis, and more especially in pediculosis pubis, a twenty-five per cent. ointment of this oleate will often prove curative.

The mercury oleate, in some instances, may be advantageously combined with the other oleates.

Oleate of Zinc.—Dry, white, pulverulent, impalpable powder of a soapy touch, resembling powdered soapstone; if pure, should make a clear solution with oils, lard, &c., over a water-bath. It may be used either as a dusting powder or as an ointment. An ointment of one or two drachms to the ounce of cosmoline or any fatty base is most commonly used. Sometimes the oleate made up in ointment form with oleic acid seems to be more efficacious. A very good way of prescribing it is as follows:—

℞. Zinci oleatis,
 Acidi oleici, - - - - āā 3 j.
 Petrolati,
 Cerati simplicis, - - - - āā 3 iij.

Ft. ungt.

To a great extent this oleate replaces the oxide of zinc, and may be ordered whenever that substance is indicated. Acute vesicular eczema may be successfully treated with the application of black wash and the subsequent application of an ointment of oleate of zinc; the wash is to be applied with a sponge or soft rag for several minutes two or three times daily, after each application has dried, a small quantity of the ointment being gently rubbed over. In some instances the disease seems to be more favourably influenced by the oleate employed as a dusting powder. When such is indicated, the following will prove an eligible formula:—

℞. Pulv. zinci oleatis,
 Talci veneti, - - - - āā 3 iij.
 Amyli, - - - - 3 ij.

M.

This is to be dusted over the parts several times daily. The same plan of treatment is frequently of advantage in all weeping eczemas. In intertrigo, a dusting powder, such as given above, is very comforting. This oleate makes a harmless toilet powder, and combined with talc and calamine, as in the formula below, will make an excellent powder for such purposes:—

R. Calaminæ præparatæ,	-	-	3 ij.
Talci veneti,			
Zinci oleatis,	-	-	āā 3 vij.
Olei rosæ,	-	-	q. s.

M. S.—Toilet powder.

This last may also be employed as a dusting powder in moist eczema and similar inflammations.

Oleate of Lead.—Yellowish-white in colour, much resembling lead plaster, but somewhat harder and more brittle. A good ointment is made by melting with an equal part of oleic acid, vaseline, or lard; as such it makes an excellent substitute for Hebra's litharge ointment, and will keep for an indefinite time. It is protective, astringent, and sedative, and may be prescribed whenever such an ointment is called for. In acute and subacute eczema its use is followed at times by rapid improvement. In the more chronic and sluggish forms of the disease, a proportion of oleate of mercury may be added to advantage. In order to secure a rapid and positive effect, the ointment of lead oleate should be kept constantly applied as a plaster, changing twice daily. In abrasions, erysipelas, and similar inflammations, the oleate ointment exerts a prompt and beneficial effect, reducing the inflammation and relieving pain and irritation. In dermatitis venenata an ointment of the oleate, such as mentioned, allays the intense burning, and frequently affords relief. In that troublesome affection of eczema of the nares, where slight fissuring and pustulation take place, it will occasionally be found useful. In sycosis non-parasitica, the following formula will often prove of advantage:—

R. Zinci oleatis,				
Bismuthi oleatis,	-	-	-	āā 3 j.
Plumbi oleatis,	-	-	-	3 ij.
Adipis,	-	-	-	3 iv.

Ft. ungt.

This is to be applied to the parts twice daily, after thorough cleansing with warm water.

In eczema about the anus, this oleate ointment sometimes gives

relief. Vesicular eczema of the hands may often be rapidly relieved in the following manner:—The parts are to be soaked in hot water for ten minutes, carefully dried with a soft towel, and then are to be covered with pieces of muslin thickly spread with the ointment. The application is to be renewed morning and evening; at each renewal the loose scales, crusts, and epiderm are to be gently rubbed off; no force should be employed, otherwise more harm than good will result. Treatment is to be continued for several days, at the end of which time the hands will be vastly improved. So much accomplished, a small quantity of calomel may be added to the ointment, and instead of applying it in the form of a plaster as before, it should be gently rubbed in two or three times a day. It is well to remark that although the disease is quickly brought into a favourable condition by the plan of treatment just mapped out, the progress thereafter is not so rapid.

Oleate of Bismuth.—Pearly-gray in colour, smooth, and of the consistence of ointment, and should show no trace of suspended solids when rubbed on the skin. This oleate is generally applied full strength, and is indicated in all cutaneous affections in which a soothing ointment is required. It should be gently rubbed over the parts, and the application repeated several times daily. In such diseases as sycosis non-parasitica, dermatitis, &c., this oleate is often productive of great benefit. One of the best soothing ointments that may be prescribed is the following:—

R. Zinci oleatis,

Bismuthi oleatis, - - - āā 3 ij.

Ungt. aquæ rosæ, - - - 3 iv.

Ft. ungt.

This is to be rubbed over the parts or applied spread upon muslin as a plaster. In all cutaneous inflammations, from whatever cause, this oleate proves soothing and healing. In burns and scalds it will often be found of value.

Oleate of Aluminium.—In colour light yellow, of plastic consistence, and somewhat adhesive. For application, it should be melted with an equal part of a fatty base, such as lard or cosmo-line. It possesses an astringent action, as well as being somewhat stimulating. It may be prescribed in all skin diseases in which there is much discharge, such as dermatitis, pustular eczema, &c. In the treatment of simple ulcers an ointment of this oleate is frequently productive of improvement. In pustular eczema of children, it is useful, checking the discharge and exerting an

alterative action on the diseased skin. An excellent ointment for such cases is the following:—

R. Hydrargyri chlorid. mit., - - gr. 20
 Aluminii oleatis,
 Petrolati, - - - - - āā ʒ ss.

Ft. ungt.

Oleate of Copper.—In colour dark green, occurring both in the granular and solid forms, and possessing a slightly oily odour. For dermic use it should be melted with from two to six parts of lard, oleic acid or vaseline. Such an ointment is astringent, decidedly stimulating, and more or less destructive to the vegetable parasites. Its principal application has been in the treatment of ringworm of the scalp. A twenty per cent. ointment may be used in this disease, and it should be rubbed in once or twice daily. My experience with it in the treatment of ringworm has not been one that would support its vaunted superiority over other methods—in fact, it has not seemed to possess any merit over a host of remedies which have been long in use, besides possessing the disadvantage of soiling everything with which it comes in contact. It is, for this disease, far inferior to the oleate of mercury ointment already mentioned.

In ulcers an ointment of this oleate will be found to exert a stimulating and healing influence, but the same disadvantage—its colour—serves to render its use unpleasant.

Oleate of Iron.—In colour reddish-brown, of plastic consistence, and having a ferruginous and oily odour; making with petroleum benzin a clear reddish solution. Applied to the sound skin it has very little, if any, action. To ulcerated, denuded or discharging surfaces, it has an astringent and stimulating effect. It may be used pure, or better with an equal part of lard or cosmoline. It has been suggested that this oleate should be used to impress the general system, in cases in which the internal administration of iron preparations is contra-indicated. To say the least, this action is highly problematical; and even if sufficient iron were absorbed, its colour would prove a serious inconvenience to its use for inunction. As yet the utility of this oleate remains to be demonstrated.

Oleate of Arsenic.—In colour reddish-yellow, solid and granular, melting over a water-bath; insoluble in alcohol, but soluble in petroleum benzin, a filtered solution of which, if treated with hydrogen sulphide, will give a yellow precipitate of sulphide of arsenic. It should be melted with from two to six parts of a fatty

base for dermic application. In epithelioma and the ulcerations of lupus, it may be found useful. It is, however, in these diseases inferior to other well-known methods of treatment. In a few cases of psoriasis, its application in the form of an ointment of the strength of one drachm to the half ounce of lard has appeared of benefit. So far as experience has shown, its use is very limited.

Oleate of Silver.—In colour grayish-brown, pulverulent, and possessing the oleic acid odour. As a powder, it may be dusted over ulcers for its stimulating and alterative effect. It may also be prescribed in ointment form, one drachm of the oleate to the ounce of lard or any fatty base.

Oleate of Quinia.—In colour brownish, of plastic consistence, and of a sweet and oily odour. So far, the use of this oleate has been limited to inunction to impress the system at large. For this purpose it should be mixed with olive oil, lard, or oleic acid. In the past year another use has suggested itself. As is well known, lotions containing quinine have been employed for several years past for the treatment of premature baldness, seborrhœa, &c. Unquestionably the oleate is better adapted for this purpose than any lotion of quinine heretofore employed, and in the few cases in which it has been tried, has seemed to act favourably; and further experience in its use for these diseases, may corroborate the favourable impression already formed. The ointment which I have employed in the few cases referred to is the following:—

R. Quiniæ oleatis, - - - - 3 ss.

Adipis benzoat.,

Petrolati, - - - - āā 3 ss.

Ft. ungt.

A small quantity of this ointment is to be rubbed in every evening, or less frequently, as may seem indicated.

In addition to the oleates already named, there are several others which have been employed in cutaneous diseases; but either they have failed to show any therapeutical effect, or experience in their use has been so limited as to make special mention of them at the present time unnecessary—these are the oleates of tin, antimony, nickel, cadmium, &c. The oleates of the alkaloids, morphia, aconitia, veratria, &c., are important, but as their use is confined to other than cutaneous medication, they fall beyond the scope of this paper.

Recapitulating, I may say that of all the oleates so far introduced for the treatment of diseases of the skin, the following may be

considered as possessing therapeutic powers which experience has attested:—Oleate of mercury, oleate of zinc, oleate of lead, and oleate of bismuth. The other oleates have as yet failed in adequately supporting any attested claim to curative powers; further experience in their use may, however, prove them worthy of a permanent place in dermic therapeutics.

In ordering the oleates, several points are to be kept in mind. If the action of the proposed ointment is to be mainly protective, then the oleate is best made up with one of the paraffinates; if there is to be a certain amount of penetrating power along with a protective influence, then a mixture of lard or oleic acid with a paraffinate is to be prescribed as the base of the oleate ointment; again, if absorption is the main point aimed at, then the oleate compound should be made up of lard, oleic acid, or a combination of the two.

In some cases (and they are by no means few) the oleates are found to disagree; instead of an improvement, a slight or marked aggravation occurs. In not a few instances this may be due to the bad quality of the oleate used; but that it may occur with oleates which are of the best manufacture, is beyond question. Oleates, if properly prepared, will keep almost indefinitely; but if prepared in the old way, with an excess of oleic acid present, they will frequently be found to deteriorate.*

In conclusion, it may be said, as already stated in the first part of the paper, that the oleates are to be considered merely as additional means of treating cutaneous diseases, and are in no sense to be looked upon as panaceas, for often enough they must be discarded to give place to the older and tried methods of dermic medication.—(*Med. and Surg. Rep.*, March, 1884.)

* L. Wolff & Co., Philadelphia; Theo. Metcalf & Co., Boston; and Parke, Davis & Co., Detroit, have furnished me with oleates well prepared and of good quality.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F.R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, August 9, 1884.

Dublin,	351,014	725	583	128	125	-	-	21	1	12	22	29	79	21.6	3.2
Belfast,	216,622	577	550	71	62	-	-	6	-	8	3	18	57	21.0	2.1
Cork,	80,124	166	141	17	41	-	-	-	-	3	4	4	22	22.9	1.8
Limerick,	38,562	94	78	11	18	-	-	2	-	2	3	3	13	26.3	3.4
Derry,	29,162	49	39	3	6	-	-	5	-	1	1	1	6	17.4	3.6
Waterford,	22,457	56	41	4	11	-	-	-	-	-	1	2	5	23.8	1.7
Galway,	15,471	33	28	5	13	-	-	-	-	-	1	-	3	23.5	0.9
Newry,	14,608	35	11	2	2	-	-	-	-	1	1	-	2	9.7	1.8

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 26.3 per 1,000 of the population annually in Limerick, 23.8 in Waterford, 23.5 in Galway, 22.9 in Cork; the lowest rates are 9.7 in Newry, 17.4 in Derry, 21.0 in Belfast, and 21.6 in Dublin. The rate of mortality from seven chief zymotics ranged from 3.6 per 1,000 per annum in Derry, 3.4 in Limerick, 3.2 in Dublin, 2.1 in Belfast, 1.8 in Cork and Newry, and 1.7 in Waterford to 0.9 in Galway. There is again generally a perceptible increase in the general mortality and in that due to zymotic diseases.

The recorded deaths represent a rate per 1,000 of the population annually of 23·5 in twenty-eight large English towns (including London, in which the rate was 24·0), 20·8 in the sixteen chief towns of Ireland, 25·8 in Glasgow, and 17·0 in Edinburgh. There is a marked increase in the mortality in the English towns and in Glasgow, whereas it has fallen in the Irish towns, and is very low in Edinburgh. If the deaths (numbering 20) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 20·9, while that of the portion of the district included within the municipal boundary is 22·7. In London the epidemic of smallpox is declining—the deaths were only 97 against 185, 155, 85, and 46 in the four preceding periods respectively. On the other hand, warm, dry weather was accompanied with a vast increase in the deaths from diarrhoeal diseases, which numbered 1,519 against 500 in the preceding four weeks.

Acute febrile zymotics were returned as the cause of death in 99 instances in the Dublin district, compared with 76, 62, 84, 82, 71, and 72 in the six preceding periods of four weeks each, and a ten-years' average of 105·3 in the corresponding period. This group of maladies therefore once more showed a decidedly increased mortality, while they were not quite as fatal as usual. The 99 deaths included 21 from scarlet fever, 22 from "fever," 12 from whooping-cough, 29 from diarrhoeal diseases, and 1 from diphtheria. The epidemic of scarlet fever continues. Of the 21 fatal cases, 2 occurred in the Donnybrook (Pembroke Township) District, and as many as 8 in that of Blackrock. Of the 22 deaths referred to "fever," 5 were ascribed to typhus and 13 to enteric fever, while in 4 instances the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were 3 more than those registered (19) in the previous period. Fourteen children under five years succumbed to scarlet fever, including only one infant of less than twelve months. Of the 12 victims of whooping-cough 11 were under five years of age, including 5 infants of less than twelve months old.

Measles did not cause a single death in any of the selected Irish towns.

Scarlet fever was fatal in 6 instances in Belfast, the deaths being 1, 5, 9, 9, 12, and 14 in the six previous periods. The deaths from this disease fell from 7 to 5 in Derry. Diarrhoeal diseases were credited with 57 deaths in the eight towns, against 14, 26, 24, 32, 24, and 28 in the six previous periods of four weeks each. In London the rapid increase in the mortality from diarrhoeal diseases, noted in the last Report, was checked in the beginning of the period now under discussion—the weekly registered deaths being 538, 466, 301, and 219 respectively. "Fever" again showed a widespread prevalence and fatality.

In the Dublin Registration District 725 births and 583 deaths were

registered, compared with 843 births and 663 deaths in the previous four weeks. The births were those of 345 boys and 380 girls. The deaths of infants under one year rose from 116 to 123; those of persons aged sixty years and upwards fell from 150 to 125.

The deaths referred to pulmonary consumption in the eight towns were 197, compared with 243, 216, 244, 243, 212, 220, 189, 170, and 178 in the nine preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 64 deaths, against 92, 108, 172, 155, 126, 157, 161, 185, and 165 in the nine preceding periods, and an average of 80·6 in the corresponding four weeks of the previous ten years. The 64 deaths included 41 from bronchitis (average = 48·6) and 13 from pneumonia (average = 15·4). The epidemic of croupous pneumonia, or of "pneumonic fever," which has prevailed in Dublin during the past few months is evidently declining, as the deaths (13) are only one-half those registered in the previous period. Of the 41 persons who succumbed to bronchitis, 7 were infants under twelve months, whereas 13 had passed their sixtieth year.

On Saturday, August 9, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox or of measles, 35 cases of scarlet fever, 48 of typhus, 7 of enteric fever, and 8 of pneumonia.

The mean temperature of the four weeks was 59·9° in Dublin, 57·4° in Belfast, 59·8° at Roche's Point, Co. Cork, 57·0° at Edinburgh, and 63·2° at Greenwich. The returns for Glasgow are incomplete. The maximal readings of the thermometer in the screen were 74·2° in Dublin, 69° at Belfast, 72° at Cork, 76·3° at Edinburgh, and 88·5° at Greenwich.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of July, 1884.*

Mean Height of Barometer,	-	-	-	29·884 inches.
Maximal Height of Barometer (on 1st, at 9 p.m.),	-	-	-	30·193 „
Minimal Height of Barometer (on 16th, at a.m.),	-	-	-	29·434 „
Mean Dry-bulb Temperature,	-	-	-	60·1°.
Mean Wet-bulb Temperature,	-	-	-	56·3°.
Mean Dew-point Temperature,	-	-	-	53·0°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-	-	-	·405 inch.
Mean Humidity,	-	-	-	78·1 per cent.
Highest Temperature in Shade (on 5th and 30th),	-	-	-	70·7°.
Lowest Temperature in Shade (on 19th),	-	-	-	47·1°.
Lowest Temperature on Grass (Radiation) (on 19th),	-	-	-	43·3°.
Mean Amount of Cloud,	-	-	-	64·4 per cent.
Rainfall (on 25 days),	-	-	-	2·350 inches.
Greatest Daily Rainfall (on 22nd),	-	-	-	·418 inch.
General Direction of Wind,	-	-	-	S.E., W.

Remarks.

True to its traditional character, July was a very showery month—rain falling on as many as 25 days, compared with a twenty-years' average of 17·6 rainy days. Nevertheless the rainfall was only 2·350 inches, or ·149 inch below the average (2·499 inches) of the twenty years, 1865–84, inclusive. The explanation is that the rain fell chiefly in the form of showers—in fact, the 28th was the only thoroughly wet day, and on but five days did the rainfall exceed two-tenths of an inch. The mean temperature deduced from the Dry-bulb readings taken twice daily (at 9 a.m. and 9 p.m.) was 60·1°, or as nearly as possible the average; the mean temperature calculated by Kaemtz's formula from the mean maximal and minimal readings was 59·7°, compared with an average of 59·6 extending over the same 20 years mentioned above. Owing to the prevalence of clouds and the frequency of showers by day, the extremes were not great—the highest reading of the screened thermometer being 70·7° (recorded on the 5th and 30th), and the lowest being 47·1° (recorded on the 19th). Distant thunder was heard in Dublin on the 6th and 24th, but this city enjoyed a complete immunity from thunderstorms, and there was no hail. The 31st was a close, damp day, and in the evening it became foggy.

From the 1st to the 3rd inclusive, atmospherical pressure was uniform, and fine warm weather prevailed, except in Scotland, where dense fogs were observed. The 3rd and 4th were excessively hot days in England, the thermometer rising to 85° on the former and to 86° and 87° on the latter day, when severe thunderstorms were felt in parts of England and Ireland. At Shields the highest temperature on the 3rd was only 58°.

In the second week (6th–12th), the weather, although still warm, was unsettled, and showers fell frequently, accompanied in many places with much thunder and lightning, which caused considerable loss of life. During the entire period an area of relatively high atmospherical pressure was found in Scandinavia, while the barometer was lowest and very unsteady in Ireland and to the westward of this country. In the intervening region a series of shallow "thunderstorm depressions" travelled towards N. or N.E., passing chiefly over Great Britain. In Dublin distant thunder was heard at 2 p.m. of the 6th, but otherwise this city escaped the electrical disturbances which were so rife. At 11 30 a.m. of the 11th a deluging shower of rain fell over the greater part of Dublin, but the west end and Phoenix Park were almost without rain.

Until the 19th the weather remained in a changeable, showery condition, the wind blowing strongly from westerly points, and temperature finally decreasing considerably, more particularly in Ireland and Scotland. Saturday, the 19th, was beautifully fine, the previous night having been very sharp for the time of year.

For the week ending the 26th, the record is again one of unsettled,

showery weather, and temperature once more decreased. On the night of Sunday, the 20th, the thermometer fell to 35° at Wick, in the N. of Scotland; and during the night of the 25th the exposed thermometer fell to 32° on the grass in London. At night on the 22nd the heaviest rainfall of the month (.418 inch) occurred. During the two following days there were high westerly winds and heavy passing showers, attended by thunder and lightning in places and sometimes by hail.

Sunday, the 27th, was very fine, but next day was equally wet—a close rain falling during many hours. The weather then continued cloudy and dull to the end of the month—the 31st being especially gloomy, close, and oppressive. Towards evening the atmosphere became foggy to an unusual degree for summer time.

PERISCOPE.

Edited by J. F. DUFFEY, M.D., F.K.Q.C.P.

HAY FEVER AND ITS TREATMENT.

At the recent Annual Congress of the American Laryngological Association (*New York Medical News*, May 24), Dr. C. E. Sajous read a paper on the above subject, and deduced the following conclusions:—1. There is an idiosyncrasy existing in certain individuals to become influenced by certain emanations or irritating substances. 2. The idiosyncrasy is accompanied by a chronic hyperæsthesia of that part of the nasal mucous membrane covering the inferior and middle turbinated bones, the middle meatus, the floor of the nose, and that part of the septum between the limits of the olfactory membrane. 3. Organic alteration of these parts annuls that hyperæsthesia; preventing at the same time what symptoms the patient may be liable to in case of an access. 4. Any destructive agent will induce that organic alteration, but the galvano-cautery is by far the best; being painless, effective, and devoid of all danger when used in practised hands. 5. In order to obtain a satisfactory result, a sufficient number of applications must be made, covering the entire extent of the hypersensitive surface; without which the result will be doubtful. Dr. Roe, who had, without Dr. Sajous' cognizance, previously arrived at similar conclusions and devised similar treatment, said that in regard to diagnosis there was a simple procedure which he thought was of the greatest possible utility. This was touching the mucous membrane of the parts alluded to with the point of a probe, when an attack of asthma or other symptoms characteristic of an acute onset of the hay fever trouble would instantly be brought on. It was thus in the power of the operator to test whether

his treatment has been thorough or not; for if, after he had applied the galvano-cautery to all the parts which seemed to be implicated, he touched the mucous membrane in different positions and found that no reflex irritation was set up, he could rest assured that the cure would be complete. On the other hand, if such irritation was set up, it would be necessary to apply the cautery to such portions of tissue as showed the presence of this hyperæsthesia. Some cases were undoubtedly due to obstruction of the nose and hypertrophy. In these it was necessary to destroy the hypertrophied tissue, and to be particularly careful to remove any projecting spicula of bone (if such there were) which might prove a source of irritation. Dr. Beverly Robinson, of New York, said that he had applied pure carbolic acid to the parts of the nasal mucous membrane referred to, with a very considerable degree of success. The President expressed the opinion that in every case of hay fever there were three essential elements, viz.:—(1) A neurotic. (2) A structural (in the nasal cavities). (3) A sensitive (sensitiveness to pollen, dust, or other source of irritation). If any one of these factors were removed, the case would be cured; and it was perfectly immaterial which element was eliminated. Thus, he knew of one case which was completely cured by the patient's overcoming an inherited neurotic tendency by means of a systematic course of hygienic measures undertaken for this special purpose. The combination of all the three elements was essential for the existence of the affection.

PAPER TOWELS FOR SURGICAL PURPOSES.

IN the surgical dispensary of the Philadelphia Polyclinic, Dr. Roberts has been using, with much satisfaction, Japanese paper handkerchiefs for drying wounds. Sponges are so seldom, and with such difficulty, perfectly cleansed after being once used, that they are never employed in the clinic. Ordinary cotton or linen towels are much preferable to sponges, which, if dirty, are liable to introduce septic material into wounds. Paper towels, however, answer the same purpose as cotton ones, and are so cheap that they can be thrown away after being used. They cost from six to seven and a half dollars per 1,000, and the cost of washing a large number of ordinary towels is thus avoided. The paper towels are scarcely fit for drying the hands after washing, unless several are used at once. For removing blood from wounds, a paper towel is crumpled up into a sort of ball, and then used as a sponge. Such balls absorb blood rapidly.—*Med. Times and Gazette.*

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OF

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THE DUBLIN JOURNAL OF MEDICAL SCIENCE.

OCTOBER 1, 1884.

PART I. ORIGINAL COMMUNICATIONS.

ART. XII.—*Trephining in Mastoid and Tympanic Disease.* By W. I. WHEELER, F.R.C.S.I., M.D., and Master of Surgery of the University of Dublin; Member of the King and Queen's College of Physicians; Surgeon to the City of Dublin Hospital, and Lecturer on Clinical and Operative Surgery; Consulting Surgeon to the National Institution for the Blind of Ireland; Ex-President of the Royal College of Surgeons, and of the Surgical Section of the Academy of Medicine in Ireland.

EARLY in last year I read before the Surgical Section of the Academy of Medicine in Ireland an epitome of cases which came under my care and were treated by trephining, for mastoid and tympanic disease.

The favourable manner in which this paper was noticed by the *Edinburgh Review* induces me to record the particulars of another more recent case, successfully treated for similar disease; while, at the same time, I will avail myself of the opportunity to enlarge more fully both upon the cases there individualised as well as upon various interesting phases of the same subject taken generally. Otorrhœa, or discharge from the ear, whether from disease of the osseous structures or from other causes, must necessarily be of interest to the practical surgeon, knowing as he does that such affection is fraught with imminent danger, momentarily imperilling existence.

Truly, were we in want of proof of this, further than already exists in the literature of the subject, there are citable cases in this city and its suburbs wherein patients have succumbed from this affection, from want of timely interference on the part of the attendant, either to deal with the disease himself, or from his failing to obtain the assistance of someone competent to do so.

It is, however, to discharges caused by disease of the osseous structures that I intend more particularly to refer. The mastoid process and cells appear to be most frequently the seat of disease; and the commonest causes for this, as well as for disease of the tympanum in childhood are—measles, scarlet fever, smallpox, and scrofula. The mucous membrane at this time is generally affected and much thickened, and in the hitherto undeveloped state of the mastoid process the mucus is retained in the horizontal part, which is bounded by the squamous portion of the temporal bone externally and above by the lamina of the tympanic wall. Hence, when disease occurs in the mastoid cells in early life, the cerebrum is the part of the brain which becomes engaged, the cerebellum in more advanced years. When the mastoid cells are fully developed we find them separated from the cerebellar dura mater and wall of the lateral sinus only by a thin plate of bone, perforated by a number of small veins which open into the interior of the latter; they also approach the posterior wall of the external auditory meatus. This anatomical arrangement has led to the assertion that the most frequent starting-point of disease of the mastoid cells is in the external auditory meatus (*diverticulum premastoidum* of Baritz and Renault), or *sinus mamillaris*. The extent to which the cellular cavities of the mastoid bone extend is extremely variable—in rare cases they extend even beyond the masto-occipital suture. This cellular portion of the occipital bone was found by Hyrtl (three times in 600 skulls) to form an elevation on the under-surface, situated half-way between the mastoid process of the temporal bone and the jugular process of the occipital bone. To this protuberance he has given the name of *processus pneumaticus*, its cavities being filled with air derived from the tympanum. The close proximity of the floor of the tympanum to the subjacent jugular fossa, and the contained sinus of the internal jugular vein, points to the danger of perforating this vessel, which has occurred in disease of the osseous walls of the tympanum similarly with regard to the carotid canal and artery. The thin plate of bone which separates the mastoid cells from the wall of the lateral sinus,

where the latter grooves the mastoid bone, easily allows the implication of the walls of the sinus in mastoid or tympanic disease, and as a consequence thrombosis would probably supervene.

To those forms of purulent discharge from the ear which are combined with encephalic symptoms, Itard gave the name of cerebral otorrhœa. He named two varieties, one in which the pus was formed at first in connexion with the brain or its membranes, and the second in which the cerebral disease was secondary to that of the ear. To these two forms he gave the name of primary and consecutive (cerebral otorrhœa) respectively. He regarded the former as much the more frequent. His views, although supported by Abercrombie, Brodie, Voillemier, and others, have lost ground almost completely.

It will be *à propos* here to consider the different ways in which suppurative inflammation of the dura mater follows carious disease of the osseous structures, petrous portion of the tympanum, cavity of the labyrinth (carious disease of), and the wall of the external auditory meatus, &c. : —

1. Through the internal auditory meatus, in which are prolongations of the membranes.

2. Through the hiatus Fallopii.

3. Through the aqueduct of the vestibule.

4. Through the tegmen tympani, always thin in the normal state, and sometimes deficient over a limited area, so as to place the lining membrane of the tympanum in direct contact with the dura mater.

5. Through the fissura petro-squamosa—the dura mater sometimes sending in a vascular process its entire length into the tympanum and mastoid apophysis, and by means of which the central envelope is placed, with regard to its nutrition, in more intimate relation with the middle ear.

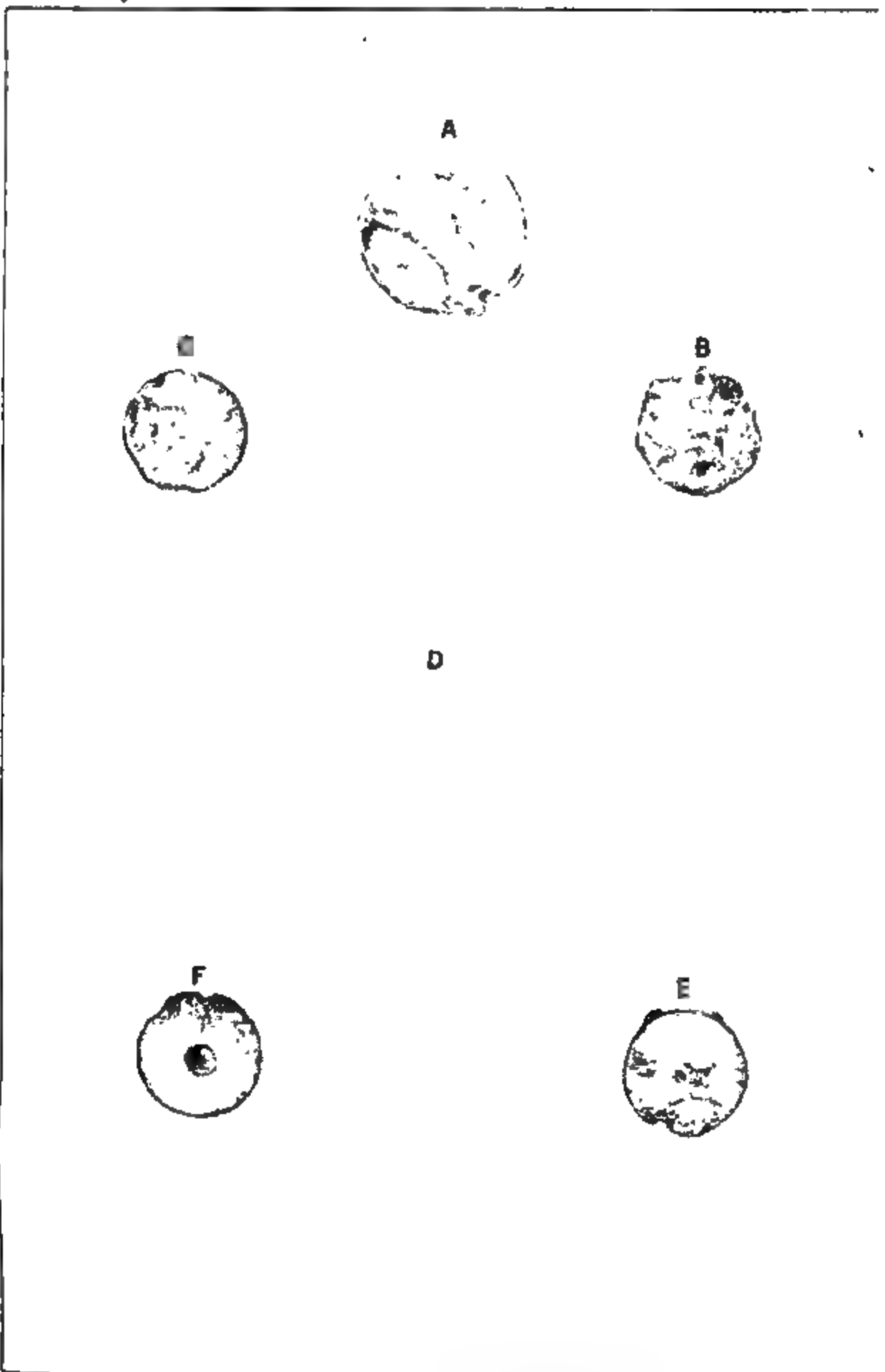
6. Occasionally by means of a slit for the dura mater, situated between the epiotic and opisthotic elements, near the aqueduct of the vestibule.

7. Through the canals of Verga and vascular canals of Maas; the latter are behind the superior semicircular canals, and connect the middle ear with the middle cranial fossa.

Having thus briefly related the majority of the sources through which disease may travel to the brain and its membranes, I will detail the history of the last three cases of carious disease of the mastoid cells under my care, which I trephined :—

CASE I.—D., a man nearly seventy years of age, young, however, for his years, and who stated he was but fifty-six years of age, was admitted into the City of Dublin Hospital under my care in February, 1881, suffering from a purulent discharge from his right ear, which passed through the upper part of the membrana tympani, where Revinus describes a notch closed by a valve, and which was formerly called the hiatus Revinianus. This is, however, denied by most anatomists, and really corresponds to what Shrapnell has correctly designated the membrana flaccida, in contra-distinction to the membrana tensa, which comprises all the rest of the membrane. This lax portion is the most frequent seat of perforation. The patient had pain round the mastoid process, and on tapping it considerable pain, especially at a point corresponding to the posterior root of the zygoma, but inferior to the latter. When the ear was syringed and cleansed further discharge would flow by getting the patient to forcibly blow his nose. The otorrhœa was of comparatively recent duration. He stated he was quite well four months previous to admission, when he had an attack of fever, which, he said, was typhus. On recovering from this the purulent discharge commenced. He had some pain at the back of his ear, but it was never much. Having come to the determination that disease existed in the mastoid cells, I made up my mind to operate, and on the 3rd March, the patient being under the influence of ether, I made an incision from the upper part of the mastoid process in the direction of the posterior root of the zygoma and a little above it, and continued this in a semicircle downwards, close to the pinna, and a little below the external auditory meatus, and dissected all back towards the mastoid process. I then placed the crown of a trephine on a level with the external auditory meatus, and removed the piece of bone shown in the accompanying Plate, Figs. A and D. The disease on its internal surface is evident. The upper portion, it will be perceived, is eaten away. By the removal of this piece of bone the mastoid cells were opened, the tympanum also, and the dura mater exposed. Pus did not flow from the wound for twenty-three hours, when the discharge from the ear lessened, and finally ceased. For two or three days after the operation he had some pain down the right side of his neck, which was relieved by opiate fomentations. In one month from date of operation the wound was closed, and he left the hospital perfectly well. I saw him within the last week. He is in excellent health, following his avocations as a gardener.

CASE II.—M. F., a man, forty-one years of age, was admitted on the 27th day of November, 1882, into the City of Dublin Hospital under my care. He had always been healthy. Some thirteen or fourteen years ago he had a running from his right ear, which stopped suddenly. He thought no more about it, nor did he, at the time, adopt



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MR. WHEELER ON TREPHINING IN MASTOID, AND TYMPANIC DISEASE.

- | | |
|---|---|
| A. Internal Surface of Bone, removed from DOOGAN. | D. External Surface of Bone, removed from Doog. |
| B. Internal Surface of Bone, removed from M. P. | E. External Surface of Bone, removed from M. P. |
| C. Internal Surface of Bone, removed from HURLEY. | F. External Surface of Bone, removed from Hur. |

any treatment for it. In the beginning of last November he got a severe cold, and had acute pain in the region of his mastoid process; the entire side of his head became painful; he could not bear to have it touched, and got no sleep for more than eight days. He was told it was erysipelas; and after about a week, during which period he suffered intensely, a purulent discharge came from his ear. He then got some relief. Before his admission, I am informed that during the acute symptoms he was dull, and did not answer questions asked of him, until repeated two or three times—in fact, he lacked response. This patient exhibited all the signs of osseous disease—pain all over and surrounding the mastoid process, otorrhœa, deafness, large perforation of the membrana tympani; added to these the history I have above detailed. Having carefully considered the case, it was evident to me that the line of treatment calculated to relieve him was trephining. And confident of disease existing, and pus being present without sufficient exit, on the 7th of December I made an incision such as I have described, and selected a trephine somewhat smaller than that used in the former case. I placed the lower part of the crown on a level with the external auditory meatus, and thus opened the mastoid cells and the tympanum, and exposed the envelope of the brain—the dura mater; the pus actually welled up. Nothing could have been more satisfactory. The bone shown at Fig. B is a good specimen of carious disease. Two points of suture closed the wound above, the lower edges were kept separate by a small piece of lint, a hot flannel fomentation was placed over the wound, and the side of his head covered with oil-silk. The patient was then removed to bed. Pus continued to flow through the wound; the discharge from the ear lessened. The patient's temperature on the night of the operation was 98.8° ; his pulse was 88 per minute. He stated that he was not suffering pain, and he slept well subsequently to the operation. He left hospital completely recovered, and is now well.

The following are the particulars of the more recent case to which I before alluded:—

CASE III.—T. H., blacksmith, admitted into the City of Dublin Hospital, under my care, on October 17th, 1883. A strong, well-built man, about six feet high, and perhaps thirty-five years of age. He was suffering from deafness and dizziness. There was considerable swelling over the right mastoid process, accompanied by pain and redness; also the part pitted upon the application of pressure. The patient could not give any history of an injury; he had, however, suffered when a boy from scarlatina, which was followed by deafness.

I trephined him on Thursday, the 25th October, when, upon the removal of the piece of bone, matter welled out copiously, apparently

from both the mastoid cells and the tympanum. The wound healed by granulation, and from the time of the operation until the patient left the hospital, his highest temperature did not exceed 99°. He was discharged cured on the 1st December, 1883. A month ago, upon inquiring about him, I was informed that he was in active employment at Knocklong, and in perfect health. The internal and external surfaces of the bone removed are shown in Figs. C and F, in the former of which evident osseous disease is palpable.

Acute inflammation of the mastoid process, which the subject of the second case I have detailed evidently suffered from, is not common in the adult, but is more usually seen in the young. Of 67 cases collected by Mr. Buck, of New York—

13 were 10 years old or younger ;

26 „ 10 to 25 ;

9 „ 25 to 40 ;

12 „ 40 to 55 ;

7 „ 55 to 60.

The youngest was eight months old ; the eldest 62 years.

The idea of perforation of the mastoid cells dates from Vesalius, who was amongst the first to demonstrate the external structures of the mastoid process and the communication of its cells with the tympanic cavity. But it was not explicitly recommended till eighty years later, when Riolan advised its adoption for the evacuation of intra-mastoid collections of pus. The first operation of trephining appears to have been done by T. L. Petit, in the case of caries of the mastoid bone. Jasser next perforated the mastoid process, in 1776, for the cure of deafness. 98 cases of perforation have been collected by Poincot (*Dict. Méd. et Chirurg.*), in 35 of which the trephine or trepan was used ; in the remainder other instruments, gouge, drill, trocar, &c., were employed. Of the total number of cases, 15 terminated fatally ; in 2 the result is not stated ; in 5 there was no recorded result ; 5 others were under treatment at the time at which their cases were reported ; the rest were successful.

Of the 35 cases in which the trephine or trepan was used, 4 terminated fatally, while the result in the other cases has not been reported ; in the total number of cases, the result of which are differently specified, 17 per cent. were fatal, and 21 per cent. successful. Buck has collected 37 cases of suppurative inflammation in which the cases were left to nature (expectant treatment) ; 34 were fatal. It will be readily seen from the foregoing that the

operation of trephining for mastoid disease is a fairly successful one, and, on the other hand, that, from the expectant treatment in suppurative inflammation, there is little to look forward to but a fatal result. That the operation should be practised early is a self-evident fact; it is useless when pyæmia, meningitis, or phlebitis of the sinuses has appeared, although the first cerebral manifestations should not intimidate the surgeon from operating, and I doubt not but that good service will be done towards the patient by his attendant who advises operation even where no bone disease existed, but when the discharge from the tympanum has lasted for *a lengthened period*, and has not yielded to other treatment, such as syringing and enlarging the opening of the membrana tympani if necessary. Setons and issues I believe to be of little use, for although only the mucous membrane may be engaged, yet we know that a blow on the mastoid process, a severe cold, a depressing illness, may cause disease to advance to the bone, pyæmia may ensue, or death by general cerebral irritation, without the formation of abscess. A well-accomplished operation will always give free vent to pus when existing, and prevent it passing to the brain through some of the numerous channels I have recorded, and will thus save the patient. I must deprecate the operation recommended by Dr. Bagroff—namely, the use of the gouge and galvanocautery over the mastoid process; such procedure, as it appears to me, would be likely to set up irritation and inflammation. Unless, indeed, the suppuration is comparatively superficial, or discharging through a fistulous opening, I would not select to operate over the mastoid process; there one cannot remove the entire portion of the bone, on account of the proximity of the lateral sinus, and so cannot expose the dura mater, to do which I hold is very essential.

The site I would always select for operation, with the exceptions as above named, would be such as to place the lower border of the trephine on a level with the external auditory meatus, and anterior to a line dividing vertically the mastoid process. By adopting this course there will be no danger of wounding the lateral sinus, the tympanum and mastoid cells will be opened, giving full exit for discharge, the dura mater will be exposed, and should pus exist between it and the cranium, there will be ample freedom for its escape.

ART. XIII.—*Investigations into the Nature of Jequirity Inflammations.** By ARTHUR H. BENSON, M.B., F.R.C.S.I.; Ophthalmic Surgeon to City of Dublin Hospital; Assistant Surgeon to St. Mark's Ophthalmic Hospital; Examiner in Ophthalmic Surgery, Royal College of Surgeons.

THE seeds of the *abrus precatorius* (Nat. Ord. "Leguminosæ"), known in these countries as "prayer beads," have been lately introduced as therapeutic agents under the native Brazilian name of "jequirity."

Since Wecker, in the *Annales d'Oculistique* of July–August, 1882, made known to ophthalmic surgeons in Europe what had long been known to the natives of Brazil, this drug has attracted the attention of ophthalmologists in all parts of the world.

If the seeds are macerated in water for a day or two, then ground or crushed, and an infusion made or applied to the conjunctiva of the eyelids, it will produce no immediate result, but in from four to six hours a feeling of heat and tingling in the eyelids begins. In about twelve hours the lids have become markedly swollen, and, if they are everted, it will be seen that a fibrinous exudation is forming on the conjunctiva. This continues to increase in thickness for about twenty-four hours, when it resembles a croupous membrane. It can be readily raised off the conjunctiva, to which it is not firmly adherent. The conjunctiva under it is not bleeding, but rather pale and succulent.

The membrane, if removed, will reform for a variable length of time, generally about two days, after which the inflammation subsides rapidly.

During the first twenty-four hours the patient complains of considerable discomfort, in some cases amounting to intense pain in the eyes, headache, sickness of stomach, furred tongue, malaise, and general feverishness, with a considerable rise of temperature and pulse. These symptoms subside as the membrane forms, and disappear with its separation.

A single application will produce a comparatively mild attack; repeated applications, at short intervals, produce a more severe attack; and if repeated applications are made on consecutive days, the duration of the attack can be prolonged for weeks with the

* Read in the Pathological Section of the Academy of Medicine in Ireland, May 2, 1884.

continuous formation of fresh membranes on the conjunctiva, accompanied by an abundant watery purulent discharge.

The strength of the infusion used has also an influence on the intensity of the resulting ophthalmia.

If the applications are continued for a certain time—usually several weeks—the effect gradually diminishes until the conjunctiva ceases entirely to be influenced by the infusion. After a variable period of rest the conjunctiva will again respond to the jequirity.

If the eye has previously suffered from granular ophthalmia, especially if it be the dry, hard, chronic type of the affection, it is found that, as the jequirity inflammation passes off, the conjunctiva assumes a more normal appearance than before, and, after a certain number of applications, the granular ophthalmia has disappeared.

To obtain this result in cases of old-standing ophthalmia several months are usually required. It was to supersede the old and dangerous method of treatment by inoculation with gonorrhoeal pus that jequirity was first put forward. Since then its sphere of action has been greatly enlarged.

What is it in jequirity that produces this remarkable diphtheroid ophthalmia? To answer this question Sattler* instituted a series of experiments. He found in the infusion a large, freely moving, jointed, rod-shaped bacillus, which developed in great quantities, giving the liquid a dark, dirty, yellowish-green colour. To the presence of this bacillus he ascribed the potency of the drug. He found that if he destroyed the bacillus the effectiveness of the drug was also destroyed, and if he applied a pure cultivation of these bacilli he produced the characteristic results.

The spore producing the bacillus was, he considered, a very common aerial microbe, to be found everywhere in abundance, but (as had been observed in other similar cases) its noxious properties were developed only when it was cultivated on a special substance—jequirity infusion being, in this case, the one. The fact that ophthalmia was produced by the application of an infusion free from bacilli he accounted for by the ubiquity of the spores, some of which were sure to be on the conjunctiva itself.

This view of the bacillary nature of jequirity ophthalmia seemed to be everywhere accepted; the bacillus was easily seen, and I had the honour of demonstrating it in recent and in stained preparations, at a meeting of the Surgical Section of this Academy at the

* *Klinische Monatsblätter.* Mai, 1883.

beginning of the session. The theory fitted in so well with the micro-biological tendency of modern pathology that it passed current almost without inquiry; and as Sattler* had previously stated that granular ophthalmia was produced by the presence of a small round micrococcus, it seemed quite natural that when the more vigorous jequirity bacillus invaded the territory of the easy-going and feeble micrococcus, the weakest should suffer, and, by the law of the survival of the fittest, the bacillus should reign in his stead. Thus the granular ophthalmia was cured.

It seemed that here, if anywhere, was the royal road to knowledge of disease. Through study of the jequirity bacillus the germ theory would cease to be an enigma, and would soon be placed on the shelf amongst the other established facts of science, no longer a mere working hypothesis, but an indisputable reality. Jequirity ophthalmia could be produced at will, and all its phenomena studied at leisure. The bacillus was large and easily cultivated, and took kindly to the staining fluids.

Wishing, therefore, to observe somewhat more fully the nature and habits of this bacillus, and its mode of development in the conjunctival sac, I admitted, in January last, into St. Mark's Hospital, three fresh cases of granular ophthalmia, and into each of their eyes I introduced a five per cent. infusion of jequirity. With the assistance of Dr. Keane, the House Surgeon at St. Mark's, whose energy on this occasion I must here gratefully acknowledge, I obtained specimens of the discharge and of the membrane formed in each eye at intervals during the whole attack. The total number of slides prepared and stained with gentian violet, and mounted in dammar, was about 70. On examining these we were much perplexed and disappointed to find that not a single bacillus could be seen, although the jequirity solution which caused the ophthalmia was swarming with them. Fearing that some error of preparation, or want of experience in such matters, had been the cause of our failure, I brought three other patients, each with well-marked jequirity ophthalmia, in different stages, to Professor Purser, in his laboratory in Trinity College.

From these he kindly made several preparations both of the discharge and of the membrane, but he, too, obtained only negative results, not a single bacillus being found in any of the preparations. Subsequently I brought other patients to have the secretions examined, but ever with the same result. We therefore concluded

* *Ophthalmic Review*. Vol. I., p. 406.

that *the discharge and the membrane formed in jequirity ophthalmia contained no bacilli.*

If the bacilli caused the ophthalmia, how happened it that none were to be found in the conjunctival secretions? This suggested further investigation. Was the discharge infectious? Masses of the membrane and discharge formed in well-marked cases of jequirity ophthalmia were introduced into the conjunctival sacs of several hitherto untreated cases of granular ophthalmia. Some eyes were bandaged up immediately afterwards, whilst others were left uncovered. In no case was there the least trace of jequirity ophthalmia produced by the introduction of the discharge. The same result occurred when healthy eyes were similarly treated. We therefore concluded that *jequirity ophthalmia was not communicable*, and consequently that no ill result was likely to occur if such cases were allowed to remain in the same ward with others—a matter of very considerable practical importance.

It seemed necessary to investigate under what conditions the specific ophthalmia could be produced.

Preparations of jequirity were made in various ways, and it was found that the rather elaborate and troublesome directions given by Wecker were entirely unnecessary, and that as good results could be obtained from a freshly-prepared infusion made by grinding the seeds in a hand coffee-mill and mixing the powder with cold water as by the original method. For this suggestion as to grinding the seeds, &c., I am indebted to Mr. Winton, our Apothecary at St. Mark's. An infusion so made is free from bacilli, and will usually not show them until after thirty-six hours—in some cases not till the third day.

The bacilli then increase and multiply plentifully, and in several preparations which I examined after an interval of six weeks they still existed in great abundance, and exhibited undiminished activity of motion. In some preparations, apparently made in the same way, and treated similarly, the bacilli, after a week or ten days of activity, apparently died and sank to the bottom motionless.

These several preparations I applied to various eyes, and found that in each case an ophthalmia of the typical kind was produced. I then dusted some dry, very finely powdered jequirity on to the conjunctiva of an everted eyelid, and found that it also produced the typical ophthalmia, and in as short a time as did the infusion containing the bacilli ready-grown.

The specimens of membrane which I show were obtained as the

result of a single application of a jequirity infusion six weeks old. They were formed on three successive days, and exhibited complete casts of the conjunctiva of the lids and globe without interruption at the fornix conjunctivæ.

It was therefore established that the special ophthalmia—which Sattler considered was due to the presence of this bacillus—could be equally well produced by—

1. A freshly prepared cold infusion made from the ground-up seeds without previous maceration or subsequent filtration, and in which no bacilli had developed.

2. The same after bacilli had developed, and whilst they still retained active motion.

3. The same when over eight weeks old, and still swarming with an innumerable variety of micro-organisms of different kinds.

4. The same having for some ten days contained living moving bacilli, subsequently becoming clear, the bacilli falling to the bottom motionless.

5. And finally by jequirity powder itself, freshly ground, in which no bacilli existed.*

It appeared, therefore, that Sattler's views on the subject required modification.

Recently Neisser of Breslau,^b Klein of London,^c Salomonsen and Holmfeld of Copenhagen,^d have published the results of their investigations regarding the nature of jequirity ophthalmia. These all serve to confirm the idea that the inflammation excited by jequirity is not in any way dependent upon the presence of a bacillus, but that the active principle is more likely a non-particulate vegetable substance, possibly a ferment like pepsin, which is soluble in water and in glycerine, but is destructible by boiling. They further show that the bacilli, as they multiply, tend rather to diminish than to add to the efficacy of the preparation.

These investigators also failed to find bacilli or their spores in the conjunctival discharges, nor could they produce ophthalmia by inoculation with them.

Inoculation with jequirity bacilli cultivated in other fluids failed to produce the ophthalmia, whilst jequirity infusions which had

* Since writing the above I have obtained the characteristic ophthalmia by using a glycerine of jequirity. This preparation is free from bacilli, and will retain its specific properties for an almost indefinite length of time.—A. H. B.

^b Centralblatt f. prakt. Augenheilk. Feb., 1884. P. 51.

^c Centralblatt f. d. medicinischen Wissensch. Feb. 23rd, 1884.

^d Centralblatt f. prakt. Augenheilk. March, 1884. P. 91.

been sterilised by boiling produced the bacilli, but failed to produce the ophthalmia.

It would be quite impossible in a short note like this to refer to all the investigations that have been made, but the experiments of Cornil and Berlioz should not be omitted. They found that when jequirity infusion was introduced into the subcutaneous tissue of a frog, he died in a day or two, his blood being loaded with jequirity bacilli. Rabbits and guinea-pigs could also be killed by the same, but required proportionately much larger doses.

Salomonsen and Holmfeld inoculated the conjunctiva with some infected frog's blood, but without producing the ophthalmia. In this connexion it may be mentioned that in some countries animals are feloniously poisoned (*sui* poisoning) by shooting them with arrows tipped with jequirity. The head breaks off, remains in the animal, and produces his death.

We may conclude, therefore, that the bacillus is not the cause of the ophthalmia, and what Sattler regarded as an essential seems to be only an impurity in the infusion, and the true nature of jequirity inflammation has still to be discovered.

Professor Reynolds, of Trinity College, has kindly undertaken to examine the seeds with a view to the extraction of an active principle or alkaloid, if such be present.

As jequirity had shown itself so useful in granular ophthalmia, and, judging that its beneficial action consisted in establishing an acute sthenic inflammation with a distinct tendency towards recovery, in tissues occupied by an asthenic chronic inflammation with no tendency towards recovery, it occurred to me that it might be equally useful in the treatment of callous ulcers of the leg, &c. And I was the more tempted to try how it would act on such cases, as ulcers offered a much better field for investigating the nature of this inflammation than did the eye, where it was quite impossible to keep the parts under observation free from external influences.

Through the kindness of Dr. Joseph Kenny and Dr. Robert Kenny I was able to try the effects of the drug on a number of ulcers in the North Dublin Union Workhouse.

We dusted the fine powder on to about six square inches of the surface of a large vascular ulcer, and covered it up with a piece of lint soaked in carbolic oil. In about half an hour a slight tingling sensation occurred, which never amounted to pain; this lasted six or eight hours, but at no time was it very unpleasant.

Next day the whole surface of the ulcer where the powder had

been applied was a whitish-grey colour, and showed no tendency whatever to bleed, nor was there any free discharge of any kind. The surface was raised about half an inch above the rest of the ulcer, and was quite painless to touch, whilst the untouched portion remained extremely tender. After three or four days the ulcer had resumed its original appearance, and, as far as I could judge, was certainly not worse from the unwonted stimulation.

We then dusted the powder on a number of callous ulcers, some of them of very long standing, with depressed surfaces, more like wet chamois leather than anything else. Here, too, the effect was but little painful, and next day some red granulating points were visible on the floor of the ulcers.

Dr. Joseph Kenny has kindly furnished me with the following note regarding the effect produced on the cases above mentioned, which, with your permission, I shall read:—

“Five cases were treated with jequirity powder. One got three applications, two got two applications, and the remaining two got one application.

“Three of the cases were flabby ulcers, requiring stimulation, and excellent for testing the effects.

“All three were much improved, one especially so, a large, deep ulcer between the tendo-Achillis and the internal malleolus—this had been under treatment for over two years with but slight improvement. Subject weak and anæmic.

“One of the remaining two cases was a large freely granulating ulcer, encircling the ankle, and not at all a typical case for trial; it was, however, improved by one application on part of the ulcer.

“The fifth case was one of two small ulcers on a leg subject to occasional œdema from old-standing heart disease; the edges were inverted and devoid of healthy action. The effect of the jequirity was to cause slight spreading of the ulcer from breaking down of its edges—a decided advantage in such a case. In this instance the pellicle was not at all as well marked as in the others.

“The jequirity powder does not appear to give rise to any free discharge, purulent or otherwise, but simply to a thick furry pellicle which is thrown off in shreds or patches in the course of from thirty to forty-eight hours. This pellicle is easily detached as a whole once the process of separation has set in.”

Having thus established the fact that jequirity produced an inflammation on an ulcerated surface, similar in characters with that of the conjunctiva, Dr. Lentaigne and I are now engaged in

experimenting on the effects of septic, aseptic, antiseptic, and sterilised infusions and powders, and hope, by working on ulcers instead of on the conjunctiva, to arrive at more satisfactory results as to the nature of jequirity inflammations.

We hope, on a subsequent occasion, to bring our results before this Section.

ART. XIV.—*On the Increase of Insanity, with Suggestions for the Reform of Lunacy Law and Practice.** By THOMAS MORE MADDEN, M.D., F.R.C.S.E.; Physician, St. Joseph's Hospital, Dublin; Obstetric Physician, Mater Misericordiæ Hospital.

IN the "Transactions" of this Academy I recently discussed certain mental and nervous complaints, and I now desire to call attention to some medico-legal aspects of this subject. At the same time I shall offer further evidence of my former contention, that insanity and other cerebro-nervous disorders have lately increased to a very serious extent amongst all classes, and more especially amongst women in whom mental disturbances are frequently traceable to reflex irritation from utero-ovarian causes. Secondly, that owing to the general non-recognition and neglect of these sources of cerebral disturbances many women are now needlessly and improperly confined in lunatic asylums. Thirdly, I desire to point out that the present administration of these institutions, and the laws by which this is controlled, tend to various abuses, amongst which that just referred to may be numbered. Finally, I shall venture to offer some suggestions for the better administration of such asylums, and for certain amendments which appear urgently called for in the existing lunacy laws.

In the subjoined statistics will be found the clearest evidence that insanity has rapidly increased, and is still increasing, in these countries, whilst its curative treatment has not advanced in the smallest degree. This non-improvement in the curative treatment of mental diseases is probably largely due to the fact that all questions relating to insanity and other cerebro-nervous disorders are abandoned by medical practitioners, generally to those specialists who, being officially connected with lunatic asylums, are therefore considered to have an exclusive and vested interest in all that relates to psychological medicine. It appears to me, however, that

* Read in the Sub-Section of State Medicine of the Academy of Medicine in Ireland, April 10, 1884.

the questions included under this heading equally concern every medical practitioner who may be called on to diagnose and treat the incipient stages of mental derangement, and those diseases which, if neglected, may eventuate in madness, and on whom the law still imposes the responsibility of signing the warrant for the confinement of those restrained as lunatics.

The statistical evidence afforded by the official and other reports, to which we are about to refer, of the increase of insanity, and of its greater prevalence amongst women, is so conclusive that it seems difficult to realise how any person of ordinary intelligence, not being a medical superintendent of a lunatic asylum or a Commissioner in Lunacy, can dispute the fact.

At the present time one in every 414 of the population of England and Wales is a registered lunatic. In the year 1800 there was only one lunatic in 17,300 of the population (Dr. Powell). In 1806 a Select Committee of the House of Commons reported that the total number of lunatics in England and Wales was 2,248. In 1819 there were 6,000 (Burrowes). In 1823, 8,000. In 1826 upwards of 14,000 (Halliday). In 1845, when the Commissioners in Lunacy came into office, there was one lunatic in 800 of the population, whilst in the last or Thirty-seventh Annual Report of the same Commissioners we find that the number has risen to 76,766, or one in 414, being an increase of 1,923 insane persons since the previous year's Report. Of these 42,482 were female lunatics and 34,482 males. The increase in the number of female lunatics within the year was 1,188, and that in male lunatics only 676. Notwithstanding these statistics, however, the Commissioners of Lunacy, in their last Report, still deny the actual increase of insanity, and endeavour to explain their own figures away, or to minimise their importance as far as possible.

In Scotland also the increase of insanity is shown by the last official reports, whilst in Ireland, which some recent writers assert is comparatively free from this visitation, the proportion of the insane and the rapidity of the increase of mental diseases appear to be more marked than in any other part of the British Empire. Since 1851 the population of Ireland has decreased from 6,574,278 to 5,159,839, and yet within this time there has been an increase of 41 per cent. in the number of registered lunatics. In 1881 this amounted to 9,980, or 1 in 1,291 of the population, and at present it has risen to 13,820—that is, 1 in 369; but if we add to this the 6,000 lunatics who were shown by the last Census

Report to be at large throughout the country, then there are no less than 19,820 lunatics in Ireland—that is, 1 to every 214 of the population. Of the lunatics under restraint in asylums 6,866 were males and 6,955 females, and of these in private asylums 385 were female and 236 male lunatics.

In further proof that insanity is daily more and more prevalent, I may cite another of the psychological authorities that dispute the fact—Dr. L. Robertson, who, in an address in the “Transactions of the International Medical Congress of London,” gives the following statistics:—

TABLE NO. I.—*Showing the number of Lunatics in England and Wales in the several Decenniums, 1860, 1870, 1880, with their Places of Residence and Proportion to the Population.*

Where Detained	1860			1870			1880		
	Private	Pauper	Total	Private	Pauper	Total	Private	Pauper	Total
Public Asylums -	2,000	17,442	19,442	2,780	28,229	31,009	3,754	39,986	43,730
Private Asylums -	2,948	1,352	4,300	3,144	1,760	4,904	3,398	1,141	4,549
Workhouses -	—	8,219	8,219	—	11,358	11,358	—	16,464	16,464
Private Dwellings	117	5,980	6,097	356	7,086	7,442	468	5,980	6,448
Totals - -	5,065	32,993	38,058	6,280	48,433	54,713	7,620	63,571	71,191
Ratio per 1,000 of the population }	2.54	16.58	19.12	2.79	21.52	24.31	2.99	24.95	27.94

The proportion per cent. of stated recoveries in cases of insanity, notwithstanding the boasted progress of psychological medicine, appears to be no greater at present than was the case in the earliest period of which we have any record in the history of lunatic asylums. The oldest of these institutions in England is Bethlem, and there nearly two hundred years ago the proportion of recoveries was actually much higher than is now the case in any of our lunatic asylums. Thus, from 1684 to 1703, 1,294 insane patients were admitted into Bethlem, and of these 890 were cured (Tyson, cited by Burrowes). Coming down to a more recent period, in the Stafford Asylum, during ten years, from 1818 to 1828, 43 per cent. of all the patients admitted were cured.

About the same time in the Lancaster Asylum the proportion of recoveries was 39 per cent., and in the Wakefield Asylum 42 per cent. (Pritchard). In 1874, according to the official report for that year, the proportion of stated recoveries to admissions in the public and private lunatic asylums of England and Wales was 40·53 per cent. This has not been since exceeded, and in the last year reported on the proportion of recoveries was still smaller.

The foregoing statistics prove that insanity is yearly increasing in prevalence amongst all classes, and that this increase is most notable in women, whilst the curative treatment has made no progress. I may now add a few words on some of the causes of this growing tendency to mental disorders observable of late years. These causes are moral as well as physical, and both largely arise from the changed conditions of society within the last two or three decades—the race for life being now too generally run at a pace destructive alike of mental and bodily health. Amongst the many circumstances, too numerous even to enumerate here, which thus conduce to the increase of insanity, are the prevailing tendency to alcoholism in all classes and in both sexes, which is too apparent to those who as medical practitioners are most conversant with the inner life of modern society; secondly, the growing luxuriousness and sensuality of the youth of the present day; thirdly, the forced system of education by which the mental powers are over-strained and prematurely exhausted in the effort to acquire that superficial smattering of pseudo knowledge which is now deemed universally essential; and, fourthly, the misdirected tendencies of modern female education in youth, and the neglect of suitable occupation for women in after-life—all these must be recognised as powerful moral factors in the ætiology of insanity.

Having already fully discussed the pre-disposing and exciting physical causes of reflex cerebro-nervous disorders in women, and especially the influence of peri-uterine irritation in their causation in the “Transactions” of the Dublin Obstetrical Society, and of the Academy of Medicine, *The American Journal of Obstetrics*, *Dr. Quain's Dictionary of Medicine*, *The Medical Press and Circular*, and *British Medical Journal*, I shall not now again dwell on them. I may, however, add that further experience proves that more than thirty per cent. of all the patients under observation in the gynæcological department of the hospital to which I am attached show unmistakable symptoms of nervous, hysterical, or mental disturbances, consequent on their gynæcological complaints.

The functional connexion between the cerebro-nervous and reproductive systems in women is apparent at every catamenial period from the first appearance of menstruation to its cessation at the menopause, as well as in every deviation from normal menstrual action by the general manifestation at these times of hysterical or nervous symptoms. In all chronic utero-ovarian complaints, and in all forms of displacement of the uterus, the reflex consequences of peri-uterine irritation are evinced by various cerebro-nervous derangements ranging from hysteria to epilepsy or insanity.

A peculiar tendency to nervous or mental excitability generally accompanies pregnancy ; whilst the reflex peri-uterine causation of certain cerebro-nervous disturbances is also evidenced during parturition by puerperal convulsions, and after delivery by puerperal mania.

The period of the change of life, or menopause, is one of special interest in this connexion, and, as has been well observed by Dr. Tilt, "there is then almost constantly, while this change is proceeding, a partial paralysis of that force which controls ganglionic and cerebral power, causing endless variation of nervous irritability and an amount of confusion and bewilderment which may for a time deprive women of those mental adornments to which they have made good their title by forty years' enjoyment." In many instances I have seen women thus affected display such excitability of mind and temper, perversion of the moral faculties, and disturbances of mental power, that it was difficult to say whether or not that undefinable boundary line which separates sanity from lunacy was passed. Under these circumstances I have more than once been instrumental in delivering women from needless restraint in lunatic asylums, and by appropriate treatment assisted in their complete restoration to mental as well as physical health.

The number of such cases that have come within my own cognisance, and the growing tendency to place all patients suffering from mental disturbance, however trivial and transitory, in lunatic asylums, where little if any attention is given to the treatment of the morbid conditions referred to, justifies the conclusion that amongst the fifty thousand female patients now in our lunatic asylums there are many who should never have been admitted, whilst others who might be cured of the reflex cerebral consequences of peri-uterine irritation by appropriate medical care are now, for the want of such treatment, improperly confined as lunatics.

I therefore venture to suggest some much-needed reforms in the

laws and system of lunacy administration under which these and other abuses are thus possible.

The facility with which any person can legally be consigned to a lunatic asylum is entirely unjustifiable. There are nearly 25,000 medical practitioners on the "Medical Register," and any two of these, however inexperienced, can by their certificate (the other required legal formalities being of entirely secondary importance) imprison any man or woman in these realms in a lunatic asylum. That this power is well and wisely used as a rule is unquestionable. But that it is liable to abuses must also be obvious. Not long since I was asked to give a certificate of lunacy in the case of a lady who had been for years a patient of mine, and in whom I could discover no evidence of insanity. Another physician also refused to pronounce the patient mad; and yet within a few days, on the same document signed by two others, she was sent as a lunatic into a private asylum. Those who gave this certificate may possibly have been right, and those who refused may of course have been wrong. Still, a case such as this, which, I am sorry to say, has not been singular in my experience, serves to show that a question of such importance should not be left to the arbitrary and practically irresponsible judgment of any two gentlemen who happen to be on the "Medical Register."

It would be easy to remedy this by enacting that no person should be confined as a lunatic save on the certificate of two official and responsible medical visitors or inspectors in lunacy; and that in the case of supposed female lunatics one of these officials should be a physician who has had some actual clinical experience of the various special functional disorders of women, the reflex consequences of which may eventuate in insanity or simulate it.

The laws relating to the care and custody of the insane, and the official administration by which they are supervised, differ widely in the several divisions of this so-called United Kingdom. In England the authorities charged with the duty are the Commissioners in Lunacy under the Act of 1844; in Ireland somewhat similar functions are discharged by the Inspector-General of Lunatics, nominated in 1845; and in Scotland still larger powers in this respect are exercised by the Board of Commissioners in Lunacy, established in 1858.

The first Act of Parliament providing for the care and custody of the insane was the 17 George II., c. 5, commonly known as the Vagrant Act of 1744. By this any two justices of the peace were

authorised to confine and, if necessary, chain any dangerous lunatic, and to apply any property the lunatic possessed to his maintenance. Eleven years later, by the 14 George III., c. 49, and again by the 26 of the same reign, c. 91, all lunatic asylums in or about London were required to be licensed and inspected by the College of Physicians. In 1828 the control thus exercised by the College of Physicians was transferred to a body of fifteen commissioners, and medical officers were at the same time required to attend all lunatic asylums. Subsequently this board was superseded in 1833 by the Metropolitan Commissioners in Lunacy, appointed by the 2 & 3 of William IV., c. 107; and in 1843 their powers were extended to the county and borough lunatic asylums of England and Wales. Ultimately, in the following year, by Lord Shaftesbury's Act, or 8 of Victoria, cc. 100 and 126, the present Board of Commissioners in Lunacy, over which Lord Shaftesbury presides, and which consists of three medical and three legal paid commissioners with other unpaid commissioners, was appointed and charged with the administrative responsibilities of the vast lunacy system of England and Wales. This Act was further amended by the 16 & 17 Victoria, c. 96, and the 18 & 19 Victoria, c. 105. Amongst the other duties thus imposed on these commissioners is that of visiting all lunatic asylums in or about London four times, and those throughout the rest of England and Wales twice, annually.

The Irish lunacy laws date only from the 1 & 2 George IV., c. 34, by which district public asylums and a central criminal lunatic asylum were established in Ireland. By the 7 George IV., c. 90, the inspectors of prisons were charged with the duty of annually visiting and reporting on all madhouses or places where lunatics or idiots were confined. By the 5 & 6 Victoria, c. 23, further provision was made for the licensing and inspection of private lunatic asylums in Ireland; and by the 8 & 9 Victoria, c. 107, s. 23, to the present board of two Inspectors of Lunatics the supervision of Irish lunatic asylums was transferred in 1845.

The appointment of officers of district asylums and the custody of dangerous lunatics were provided for by the 30 & 31 Victoria, c. 118. The management of the estates of lunatics and proceedings under commissions of lunacy are regulated by 34 & 35 Victoria, c. 22. And by the 38 & 39 Victoria, c. 67, certain amendments were made in the former laws relating to the detention of lunatics in public and private asylums, and powers given for the enlargement of patients on certain conditions, and for the detention of

chronic lunatics in workhouses, as well as for making the property of lunatics in district asylums convertible for their maintenance.

I shall now add a few observations with reference to the proportions which, under these laws, our present lunacy system has reached; the enormous and yearly increasing burden which the former imposes on the long-suffering taxpayers of these countries; and the urgent necessity for certain reforms which would improve the administration of these asylums, and benefit the condition of those confined therein, and also diminish materially the amount of public funds now expended on these institutions.

It may be suggestive and interesting to glance, however briefly, at the successive stages by which this system has attained its present magnitude. The first, and for many years the only, mad-house in London was Bethlem, of which a committee appointed to inquire into its condition in 1598 reported that the house was "loathsome, dirty, and not fit for any man to enter." In 1675 New Bethlem was opened, and, down to the year 1770, the inmates were publicly exhibited, first for twopence, and subsequently for one penny a head for admission to all who wished, as Dr. Connolly says, to enjoy that sight. By an Act of 1774, already cited, some attempt was made, apparently without much effect, to the removal of these fearful abuses which, as Dr. Connolly, in his learned and eloquent disquisition on this subject, has shown, continued down to the commencement of the present century, when, in the Friends' Retreat for the Insane, near York, it was demonstrated by Mr. Tuke that "these unfortunate persons might be advantageously treated with kindness and humanity." From that time institutions for the insane, public and private, have sprung up on every side, and vied with each other in carrying out the humane and kindly system thus introduced into York Retreat.

In Ireland, up to the year 1708, there was no provision for the care or custody of the insane. Sir William Fownes,* in a letter to Dean Swift, says:—"When I was Lord Mayor of Dublin, in 1708, I saw some miserable lunatics exposed to the hazard of others as well as of themselves. I then had six strong cells made at the workhouse for the most outrageous, which were soon filled, and by degrees, in a short time, these few drew the solicitation of others, and in 1728 we had in the house forty and upwards." The second attempt to provide for the custody of the insane in Ireland appears to have been in 1711, when cells were set apart at the Royal

* Wilde's *Closing Years of Dean Swift*. P. 80.

Hospital, Kilmainham, for military lunatics. In 1776 ten cells were built for lunatics in the House of Industry, Dublin. In 1778 this number was enlarged to thirty, and from the general increase of insanity in the troubled times of the Rebellion in 1798 it became necessary to again add thirty additional cells for lunatics. In 1798 a lunatic asylum was also erected in connexion with the House of Industry in Cork; and in 1810 the Richmond Lunatic Asylum was commenced. This was completed in 1814 by aid of a Parliamentary grant of £77,000. When the first inspector under the Act of 1821 commenced duty, the only public asylums for the insane in Ireland were the two mentioned in Dublin and Cork.

How great is the contrast between these small beginnings and the present extent and number of our lunatic asylums, public and private. There are now 101,096 registered lunatics in Great Britain and Ireland, and of those 90,869 are maintained at the public expense, of whom 68,846 are in English or Welsh asylums, 8,853 in Scotland, and 13,171 in Ireland. The cost of the support of the public asylums of England last year was no less than £1,033,780, whilst the Irish public asylums are supported at a yearly cost to the taxpayers of £200,000.

The object of these asylums and of this lavish expenditure of public money is to secure the safe custody and curative treatment of the insane, who, in their own interest as well as for the public weal, require restraint in such institutions. I would, therefore, venture to suggest that this purpose would be much better effected, and at much less cost to the public, were private lunatic asylums abolished by making them first or second class public asylums under the same system as that by which the county and borough asylums are now administered.

None who have opportunities as extensive as I have had of visiting the medical institutions of other countries can fail to return home better pleased with the general good management of our lunatic asylums, public and private, and with the kindly treatment of the patients in most of them. Nor is it possible to withhold our sympathy from those who, in many instances with great self-sacrifice, devote themselves to the care of the helpless victims of insanity in such institutions.

At the same time, however, I have no hesitation in saying that medical men are necessarily placed in a false position when acting either as medical superintendents of public lunatic asylums or as proprietors of private ones. The duties of the former are most

anomalous and complex. The functions of the medical superintendent of a county or borough asylum now comprise those discharged in a workhouse by the master, or in a prison by the governor, or on a model farm by the head steward, with those of secretary to a board of governors, as well as all the professional duties appertaining to the house surgeon, or resident physician of a great hospital, superadded to which is the performance of whatever special duties may be imposed on him as a medical psychologist in charge of insane patients. It is obvious that no one person could possibly discharge all these duties.

The position of medical proprietor of a private asylum is still more anomalous and difficult, as it includes all the varied and incongruous duties just referred to, and which, in his case, have to be discharged under an inseparable sense of his personal pecuniary interests.

If, in Lord Shaftesbury's words, in introducing his Lunacy Act in the House of Commons, "pauper lunatics should be maintained at the public cost, and not be received for profit, or as the objects of financial speculation," be true, then there can be no cause why the insane of the middle or upper classes should still be differently circumstanced in the latter respect.

The only justification for the imprisonment of lunatics, rich or poor, is their own welfare and that of society, and no vested right or other interest should be allowed to influence this.

Vested rights, greater than those of the proprietors of private lunatic asylums, have been very summarily dealt with by Acts of Parliament within the past few years. Therefore, if the public welfare demands the abolition of private lunatic asylums, there seems no reason why, their proprietors being of course fully compensated from the public funds, these institutions should not be transferred to the administration of commissioners in lunacy, and governed by them as first or second class public asylums. The surplus profits of these institutions might then be made available towards the support of the non-paying or pauper asylums, under the same central administration, and thus help to relieve the public funds from some part of the enormous and yearly increasing cost of our present system of pauper lunatic administration and maintenance in such institutions. The non-medical functions, now discharged by the medical superintendents, should be transferred to lay officers, analogous to the masters of workhouses or governors of prisons. Whilst being thus relieved of extra professional duties

the medical superintendent should become a resident physician and be enabled to devote himself to the care and treatment of the patients, in which he should be only subject to the advice and control of a medical board of visiting physicians and surgeons. Amongst the latter, in the case of female lunatic asylums, there should, for reasons already stated, be appointed one or more visiting physicians who have had some clinical experience of the diseases peculiar to females.

Did time permit, I should have been glad to refer further than I now can to the unsatisfactory state of the laws relating to so-called criminal lunacy and the criminal responsibility of the insane. Many years ago I submitted a communication on this subject in the "Transactions of the Medical Society of the College of Physicians," and since then some of the views and suggestions thus published have been endorsed, or rather have been appropriated, by later writers.

It should be needless to argue that the medical jurisprudence of insanity comes within the province of our discussions in this Academy. Mental operations are accomplished through, and are to some extent modified by, the state of the cerebral organisation; hence disorders of the mind act upon the bodily health, and physical diseases in their turn react on the mental functions. This, however, is yet unrecognised by those who make and those who administer our laws, and judges and lawyers still complacently propound as a truism their fallacious aphorism that "insanity is a fact and not a disease," and that its existence in any case is to be determined as other facts by the common sense of jurymen, and does not require special knowledge for its investigation. Accordingly, we find ignorant jurymen thus directed by judges who, however learned and eminent in the law, are, in this matter, little better qualified than the jury, deciding, even in cases involving the issues of life and death, one of the most difficult of scientific questions, without any knowledge of the significance of the facts on which their judgment is propounded.

The difference between those who possess merely good plain common sense, to direct them in deciding the question of sanity or insanity, and those who rest their opinion on scientific knowledge and experience, is analogous to the difference between the power of determining a ship's position at sea by astronomical observations by the skilled mariner, and the helpless ignorance of an untaught landsman on his first voyage. Both may contemplate the same

natural phenomenon, but the one, aided by science and experience, is able to deduce therefrom accurate knowledge of a fact which the other, however much good common sense he may possess, can know as little of as the judge, or jurymen, generally does of the sanity or insanity of any person who may be brought before him in a court of law.

The danger that lunacy may be easily feigned, and that this may lead to the failure of justice in criminal cases, is an idea generally predominant in the legal mind, and frequently operates to the prejudice of those in whose case this plea is raised in criminal trials. It would be easy to show how groundless this fear is. It may be, and frequently is, difficult to detect madness in cases where it actually exists. But it is almost impossible for any one to feign insanity so as to deceive an expert in this matter.

There are other questions connected with the medical jurisprudence of insanity to which only the lack of time and the length of this paper now prevents me referring.

I may, however, in conclusion, again observe that any future amendment of the laws relating to criminal lunacy should be based on the principles of the French criminal law as expounded in the 64th article of the Code Napoléon, viz. :—"Il n'y a ni crime ni délit lorsque le prévenu était en état de démence au temps de l'action." Finally, it is desirable that medical commissioners in lunacy should be appointed with analogous functions to those of the nautical assessors in marine cases, and that those medical assessors should assist and advise in all trials in which the plea of lunacy is raised.

ART. XV.—*On the Nature and Prevention of the Graver Fevers of Childbed.* By WILLIAM C. NEVILLE, M.A., M.D., M.A.O., Univ. Dubl.; late Assistant-Master, Coombe Hospital; Secretary, Obstetrical Section, Academy of Medicine in Ireland, &c.

IN 1849 Dr. Churchill described puerperal fever as a disease "whose gloom is heightened by the inutility of all precautions to guard against its attacks, and, in the majority of cases, the utter failure of all attempts to arrest its progress or to prevent its fatal termination." This description he applied more especially to the so-called

* I have since made some verbal alterations and enlarged this essay in some parts; but in every essential particular it remains the same as that read before the Obstetrical Section of the Academy of Medicine in May last.

"epidemic" form of the fever, whether occurring, as it almost always does, in hospitals, or exceptionally in the practice of individuals. The latter form of "epidemic," constituted by a succession of cases in one person's practice, he regarded as a "singular and inexplicable" occurrence—a confession of ignorance which did not, however, recommend itself a few years later to Dr. Meigs, who boldly bracketed "accident or Providence" as alternatively responsible for every outbreak of this fever. Strange alternatives—chance or Providence! With such a theory of causation, it is not surprising that precautionary measures should have fared badly. Happily Dr. Meigs, eminent authority as he was on many obstetrical subjects, did not on this particular one represent the best thoughts or tendencies of his time. If there are some who yet cherish a regard for any remnants of his explanation, let them read the crushing criticism of O. W. Holmes, by which its weakness and perversity were at once demonstrated and disposed of. Now, however, we are concerned with the means rather than with the possibility of prevention; and the conflicts of opinion which are manifested in recent contributions to this subject show by their kind that we have reached that phase of opinion, "the disagreement of the inquiring," which has been well described as a necessary antecedent to that of the "unanimity of the wise."

I need not dwell upon the importance of the prevention of "puerperal fever." The records of puerperal mortality and morbidity demonstrate clearly enough how little removed from being pathological are such physiological crises as labour and childbed. Winckel, basing his conclusions upon 717,000 hospital and 362,000 private cases, estimates the average mortality as 3 per cent. of the former, and .6–.7 per cent of the latter. The greater part of the mortality cases, especially among hospital cases, must be referred to the group of diseases which have been loosely included under the generic term "puerperal fever." Most of the morbidity of childbed must also be credited to the same kinds of causes. Obstetric science, as it exists at present, teaches us how to avert or treat with comparative success most of the accidents of labour and childbed; but it is only quite recently that serious attempts have been made in a few text-books to describe the measures by which we may hope to minimise the most frequent and the greatest of all risks to a puerpera—that of "puerperal fever" in one or other of its graver forms.

Upon the threshold of an inquiry concerning prophylaxis we are

met by the questions—What is the nature of this so-called “puerperal fever,” what are its causes, and how are they spread? The measures for its prevention must obviously hinge upon the answers we arrive at. Prophylaxis is not often, as treatment is, empirical. It must be deliberately adopted as a result of our knowledge of the causes of disease. Preventive medicine is, therefore, of modern growth; it has advanced synchronously with a closer study and knowledge of ætiology. If we know the necessary antecedents of a disease, we may aim at preventing it by insuring their absence, or by destroying in some way their pathogenic potency. In doubtful cases we may test the soundness of the theory upon which the prophylaxis rested by the results of its practical application. The successful application of the germ theory of septicæmia and traumatic fevers to the practice of aseptic and antiseptic surgery, affords an illustration of the happy influence which theory may have upon practice.

The question of NOMENCLATURE demands some preliminary consideration. It cannot be regarded as a trifling or unimportant one in view of the many and perplexing errors which we find imbedded in words and names which remain in current use, though they have long since deviated from their original meanings. An accurate scientific nomenclature can arise only in the light of precise and adequate knowledge. When we think how little was formerly known, and how much still remains to be learned, of the real nature and varieties of puerperal fever, we cannot be surprised at finding the existing nomenclature both defective and misleading. Indeed so hampered are we in this instance by the survival of an effete and confusing terminology, of vague hypotheses and traditional beliefs, that we may well doubt whether genuine progress would not be accelerated by the wholesome loss or oblivion of all that has been written in regard to these diseases. At least it is advisable for us to start fresh by grounding our conclusions upon facts recorded by others or experienced by ourselves, and by neglecting, so far as we may, the theories and phraseology of our predecessors. Thus the term *Puerperal Fever* has been, and still is, used in quite different senses—as implying that there is a particular kind of fever peculiar and, in a technical sense, *essential* to childbed; or as simply signifying the fact that fever, whatever its cause, exists in the puerpera. In still another sense it has been limited in its use to the graver and more fatal forms of fever which may arise during childbed. For adhering to its first and, in a verbal point of view, only strictly

legitimate use, I shall subsequently attempt to show that there are no sufficient grounds. In its second sense it might be more usefully replaced by the phrase "puerperal fevers"—an equivalent which would involve no error or ambiguity. In its third sense is contained an assumption, entirely unsupported by evidence, that there is a fundamental difference in kind between such fevers as are dangerous and such as are not.

"*Metria*"—avowedly a collective term—is of more recent origin, and is now being popularised by its use in the Registrar-General's Reports upon Public Health. I can see no advantages which this term possesses over the phrase "puerperal fevers," while it is open to the adverse criticism of suggesting, what is not always true, a common uterine origin for this group of diseases. I concur, therefore, in Dr. Gaillard Thomas's objection to the retention of this term, which, however, he erroneously fathers upon the Dublin School.

The main current of recent authoritative opinion seems strongly set in favour of the term *Puerperal Septicæmia*. Unfortunately "septicæmia" is a term upon the precise and uniform significance of which even pathologists among themselves are not agreed. If adopted at all in this connexion, it must be interpreted in its widest significance, as embracing two distinct processes—septic poisoning and septic infection. Moreover, though I believe that under one or both of these heads the greater number of grave puerperal fevers may properly be ranked, still it is certain that septic are not the only serious forms of fever from which a puerpera may suffer. She is exposed also to the risks of other forms of wound infection—*e.g.*, diphtheritic and, even more commonly, erysipelatous.

Abandoning therefore, as we shall see reasons for doing, the old idea of a distinct entity to which the term "puerperal fever" would be legitimately applicable, we are forced into the acceptance of the alternative one that there are many causes and kinds of puerperal fever. Hitherto we find that a too exclusive view of the nature of these diseases has permeated almost their entire literature. Writers have sought in a single cause what was to be found only in diverse causes. They have either become partisans of such a particular term as suggests the action of a common and uniform cause, or, without attempting to conceal their real lack of knowledge, they have treated of a heterogeneous variety of diseases under one expansive term. By neither method do I think that we can possibly attain to a philosophical view of this difficult subject. This we can do only by enumerating and classifying, so far as our entire know-

ledge permits, the various causes of fever in a puerpera, discriminating such as are most frequent in their action and most grave in their results. Certain guiding principles may profitably be borne in mind when attempting this classification. The puerpera, like the non-*puerpera*, is open to the action of ordinary pyrogenic causes. To some of these her peculiar physiological condition predisposes, and from others it in some degree shields her. There is a physiological receptivity established for some, and a physiological immunity from other diseases. But there is no one pyrogenic agent which acts only on a *puerpera*. As further helping to clear our difficulties, we must remember how probable and in accord with general pathological laws it is that any general febrile disease, when grafted on *puerperal* soil, should manifest, in addition to its own proper signs and symptoms, others which result from its action upon the then unstable and peculiarly impressionable generative system.

A certain sameness of type characterises, therefore, all *puerperal* fevers, and it is to this sameness that we must attribute the belief, not yet extinct, in a single definite fever arising out of the conditions of *puerperality*. Let us briefly glance at these conditions, so important in predisposing to diseases, and in impressing upon them a common likeness. They are in part inherited from pregnancy, and in part developed during labour and the *puerperal* state. Among the inherited conditions the chief are those of the blood—*hydræmic* and *hyperinotic*, with a decrease in the number of red corpuscles, and an increase in that of the white. There exists what *Kiwisch* described as a “*sero-fibrinous plethora*,” a condition of the blood which *Caseaux* forcibly argued was identical with that found in *chlorotics*. Here also we must consider the peculiarly excitable and unstable condition of the nervous system which has originated during pregnancy, and culminated during labour. The *puerpera* is in a remarkable degree exposed to emotional influences, the effects of which upon her progress towards convalescence, retarding or accelerating it, are in certain classes of cases only too well known. As local conditions which result from labour we find rapid disintegrative and absorptive processes focussed around a more or less bruised and torn genital canal, which is everywhere encompassed by enormously dilated and hypertrophied blood and lymph vessels in the immediate vicinity of the great peritoneal lymph sac; and along the pouched and sinuous canal the lochial discharge, formed of dead and easily decomposable material, is constantly being excreted—remarkable physiological conditions which afford such

facilities for the development of pathological processes, should an exciting cause of disease only happen to be present.

The waste products of tissue metamorphosis are eliminated by the lochia, and, after absorption, by cutaneous and renal hyper-secretion, or by the secretion from the breasts, the evolution of which proceeds side by side with the involution of the rest of the generative system. The free elimination of excrementitious matters by these various depurating channels is an essential of healthy childbed. Otherwise to the pre-existing impoverishment is quickly added an adulteration of the blood by the accumulation in it of the products of disintegrating tissue. A true endogenetic toxæmia may thus occur, constituting in itself one form of puerperal fever, and markedly predisposing the puerpera to the superadded risks of hetero-genetic infection. It is thus, in part at least, that such commonly trivial events as a chill or catching cold may have a prejudicial effect upon puerperal patients. Perhaps also it is by checking the secretions that emotional causes have their undoubted influence. And the not uncommon presence of renal disease or inadequacy forms, in the case of puerperal even more than of ordinary traumatism, a potent predisposing factor to the occurrence of such complications as diffuse cellulitis, erysipelatous inflammations, septic absorption and infection, &c. From these considerations we can understand how immediately local processes are dependent for their healthy and physiological characters upon the soundness of the body generally, and of the depurative organs more particularly.

Fever in a puerpera may be due to—

(1.) The presence of one of the exanthemata, modified by and modifying the general and local concomitant conditions.

(2.) Simple traumatic or localised inflammations, unaccompanied by the graver symptoms of systemic poisoning.

(3.) Systemic poisoning which has its origin within the body, and results from the retention within it of excrementitious products which are not eliminated by the usual excretory channels—a purely endogenetic toxæmia, or self-empoisonment.

(4.) Systemic poisoning which originates from some focus of absorption or infection along the genital tract. As in the last class, the constitutional symptoms here also precede and to a great degree cloak the more purely local ones. Under this heading we include cases of—

(a.) Septic poisoning or absorption.

(b.) Septic infection, and other wound-infective diseases—*e.g.*, erysipelatous and diphtheritic.

Certain points require to be noted in connexion with this attempted classification. It aims rather at being suggestive than complete, and is intended only to embrace the more important genera of puerperal fevers. In practice, moreover, two or more of these are almost invariably so commingled as to render the task of their disentanglement well-nigh a hopeless one. This is especially so in the case of the various groupings of classes 3 and 4, to which the term "puerperal fever" was formerly loosely applied, and which form, I believe, the most frequent of the serious sources of fever in childbed. Puerperal fevers seldom result from a single efficient cause; they are complex diseases, the separate threads in the causation of which are, in practice, extremely difficult to unravel. This fact it is which constitutes at once the difficulty of their classification, prevention, and treatment.

IS THERE ANY FORM OF PUERPERAL FEVER WHICH MAY PROPERLY BE DESCRIBED AS "EPIDEMIC?"

The term "epidemic" was originally used in a purely descriptive sense, implying simply the very wide prevalence of a disease among a people. In the course of its history, however, various secondary meanings have come to be attached to it—as that the disease to which it is applied owes its prevalence to some unknown and unknowable peculiarities of the earth, air, or people, existing at the time of the epidemic. Thus some general and occult cause was assumed in order to explain an epidemic prevalence, if that be truly considered as an explanation which in no way enlightens us. Indeed the phrase "epidemic cause" appears to me to be a singularly unfortunate one, and in its use the prolific source of confusion and fallacy. It is not the *cause* of a disease, but the *conditions* which favour their growth, multiplication, and activity at a particular time or place, which are truly epidemic. Thus scarlatina may attack individuals more or less sporadically or in such numbers as sometimes to merit the application of the term "epidemic." But the scarlatinal virus remains in both cases one and the same, only in the latter case the sum of the influences which favour its spread and activity is greater than in the former. There is no special "epidemic cause," just as there is no sporadic cause.

The fallacy has been carried still further when the vague abstraction "epidemicity" has actually been assigned as in itself a cause. Thus Dr. Fordyce Barker enumerates as causes of puerperal fever "epidemic causes, contagion, and infection;" and other writers have also given to "specific epidemic influences" a causative force.

Let us glance at the evidence upon which it is sought to establish a special epidemic variety of puerperal fever. In 1849 Dr. Churchill published, for the Sydenham Society, an "Historical Sketch of Epidemics of Puerperal Fever," of which he made as complete a record as possible. He collected accounts of nearly 100 so-called epidemics which had occurred between the years 1746 and 1846. Now what are the facts brought into prominence by this record? Chiefly two—that each separate epidemic, so far as we are permitted to judge by the details which have come down to us, remained limited at most to a particular district or city, and that more than three-fourths of the entire number consisted of localised hospital outbreaks. In not one single instance was it then, or has it been since shown that the disease extended itself from its centre over a really wide area. Local in its origin, each outbreak remained also localised in its progress; and though on different occasions the disease established itself during successive years as a veritable plague in the maternities of great cities such as Vienna, Paris, London and Dublin, yet did it never spread itself out from these foci among the general outside body of puerperal women. How reconcile then the facts of this century's record of puerperal fever epidemics with a belief in the causative importance of "epidemic influences?" We are coerced rather into explaining the facts by the existence of some local cause. The summer heat is no more the cause of flies than are "epidemic influences" the causes of puerperal, or indeed of any, fever. In the course of the discussion on "Puerperal Fever," in the New York Academy of Medicine, Dr. Barker gave the following account of an "epidemic" which had occurred in that city:—"In the early months of 1873, puerperal fever prevailed in the best parts of the city, and in that class of society possessed of abundant means, and living under as good sanitary conditions as are possible in any large city, to a degree and extent here unknown for the previous twenty-five years. The deaths from this disease in the hospitals and in the parts of the city where the poor are aggregated, were much less than in many former years. In five of the best wards of the city, in which are the residences of a great proportion of those of wealth, and few of the class of dwellings known as tenement houses, with a population of 307,046, there were 80 deaths from puerperal fever, while in the remaining wards, with a population of 605,245, there were but 63 deaths."

Why does Dr. Barker not give us the puerperal death-rate in these different districts rather than the puerperal deaths in relation,

not to the number of births, but to the population? But, at most, what does his narrative prove? That puerperal fever during the year 1873 prevailed to an unusual extent among a limited section of the New York women—viz., those who inhabited a particular district, and that it did not spread into adjoining districts. Could stronger evidence be needed against Dr. Barker's hypothesis of an "epidemic influence" than this, which he naïvely adduces for quite another purpose.

The so-called "epidemics" have occurred in hospitals, or for limited periods in the practice of particular nurses or physicians, and their right explanation is clearly to be sought for in the actual transfer of the virus by hands, instruments, &c., from one patient to another. Let us take on this point the singularly candid testimony of an old writer, free from the party bias which has grown up around this question since his time. Dr. Gordon, in an essay published in 1795, narrated the history of an "epidemic" occurring in Aberdeen. The following quotations suffice to give his chief conclusions:—

"The disease attacked only such women as were visited or delivered by a practitioner, or taken care of by a nurse, who had previously attended patients affected with the disease."

"It is a disagreeable declaration for me to make that I was myself the means of carrying the disease to a great number of women."

"I arrived at that certainty in the matter that I could venture to foretell what women would be affected with the disease, upon hearing by what midwife they were to be delivered, or by what nurse they were to be attended during their lying-in, and almost in every instance my prediction was verified."

I should have no objection to the use of the term epidemic, provided it be understood as applicable to localised outbreaks, and as suggesting no theory of causation more mysterious than that of the usual contagia developing and acting under exceptionally favourable conditions. Their proper contagia are the necessary and efficient causes of the different infective diseases. Epidemic influences are accidental conditions which may sometimes cause a general or public, as distinguished from an individual, predisposition to the action of the contagia, or a peculiar activity and multiplication of the contagia themselves.

Bearing these distinctions in mind, I most strenuously protest against the argument, so often preferred or implied, that inasmuch as puerperal fever may occur in an epidemic form, its causes are

to be sought in some general and irremediable, rather than in local and preventable circumstances. I object to this theory, not only because it postulates a fictitious *epidemic cause*, but because there is no sufficient evidence to show that puerperal fevers have ever prevailed so extensively as to justify the use of the term "epidemic" in its only legitimate significance.

It is probable that the contagia of some infective forms of puerperal fever are more virulent, more enduring, and more easily carried than those of others, and that certain general conditions but vaguely understood may have some influence upon the spread of their living contagia—perhaps by increasing their fertility and hold upon life. Thus while I doubt if, under any circumstances, these fevers have ever assumed truly epidemic proportions, it is quite possible that certain locally acting conditions may sometimes account for an unusual prevalence.

Here we may naturally turn to the question—IS THERE A SPECIAL FORM OF PUERPERAL FEVER WHICH MAY BE DEFINED AS THE SPECIALLY MODIFIED OUTCOME OF SOME EXISTING EPIDEMIC ZYMOTIC? Dr. Atthill argued in this Section last year that there was such a form ("epidemic metria") "of a highly infectious nature, differing essentially in its symptoms and course from that the result of septic poisoning." I am unable to accept this view, because—

(1.) The fact that like begets like among contagious and infectious diseases has been so established by clinical and experimental observations as an axiom of modern medicine, that it can be displaced only by unequivocal evidence to the contrary. If obtainable, such evidence would revolutionise our ideas of infective diseases. We must consider that, as already mentioned, all the graver fevers which attack the puerpera are apt to exhibit a common puerperal type—pelvic and abdominal symptoms, scanty lochia, deficient milk secretion, and a tendency to pass quickly into a typhoid condition. Aggravated toxæmia is the necessary consequence of them all, and may kill before we have adequate grounds for deciding upon the real nature of the fever present. Any of the acute specific fevers attacking a patient about the time of labour is also likely to have its own course and symptoms masked by the supervention of septic poisoning and infection. Should the patient survive for a sufficient period, the original disease would most probably be indicated by appropriate symptoms or lesions; while, as its specific infective properties must still exist in the puerpera, we might expect to find

them sometimes communicated in less equivocal form to her non-puerperal attendants. Notwithstanding, however, that they are stamped with a puerperal type, the rule is undoubtedly that the various zymotics do not infrequently attack puerperæ without losing their characteristic features.

(2.) If the contagia of such fevers as scarlatina or typhus are able to give rise to an "epidemic metria," then this latter should be much more frequent than it is, and would not remain localised in hospitals, as it almost invariably does. Its diffusion would be commensurate with that of the prevalent zymotic from which it sprang.

(3.) The assumed cause leaves unexplained the very striking fact—commented on by all who have described this epidemic variety of puerperal fever—that primiparæ, or those whose labours have been protracted or difficult, are those whom it attacks most frequently.

(4.) It is impossible to reconcile this causation with the general uniformity with which the disease makes its appearance during the early days of childbed.

(5.) An examination of the Registrar-General's Reports for the past ten years has failed to show any constant connexion between "metria" and any of the zymotics. Drs. Matthews Duncan and Lusk have both carefully studied this statistical aspect of the question and arrived at similar conclusions some years since.

IS THERE ANY FEVER, PECULIAR OR ESSENTIAL TO CHILDBED, TO WHICH THE TERM "PUERPERAL FEVER" IS PROPERLY APPLICABLE? This most important question may be put otherwise, thus—Is there any specific poison which acts only on a puerpera, giving rise in her to the symptoms and lesions of an essential fever? *Primâ facie* there is much improbability in the existence of such a fever inseparably associated with a particular physiological state. The most notable of living adherents to this view—Dr. Fordyce Barker—has lately stated his reasons for holding it, in the course of a debate upon puerperal fever, following Dr. G. Thomas's paper, read before the New York Academy of Medicine. Dr. Barker then stated that "his conviction was strong that outside of hospitals less than two per cent. of the puerperal diseases, and not half of one per cent. of the deaths after childbirth were due to septicæmia." I prefer to quote Dr. Barker's arguments directly from his work upon "Puerperal Diseases," where they are given in detail, than from the reports of a discussion which appears to have suffered

somewhat from the exuberance of rhetoric and sarcastic repartee on the parts of the two principal disputants. Dr. Barker's "confession of faith" upon the subject of puerperal fever may be summarised as follows:—

There is a fever peculiar to puerperal women which belongs to the class of zymotic diseases, and is as much a distinct disease as scarlatina or typhoid. The determining cause of this fever may be either epidemic influences, contagion, infection, or nosocomial malaria. Local inflammations may or may not coexist with the fever. Auto- or hetero-genetic septicæmia may exist by themselves, or may complicate puerperal fever.

In narrowing the issue to a question between a distinct disease, appropriately termed "Puerperal Fever," and puerperal septicæmia, Dr. Barker has, I think, adopted too exclusive a standpoint. This is still true even when we confine our attention to such fevers as depend upon a primary constitutional affection, distinct from any of the exanthemata. Perhaps discreetly, Dr. Barker does not attempt a direct proof of his theory. He does not rely—as he could do in regard to diseases such as scarlatina or typhoid—upon any characteristic history, development, grouping of signs, symptoms, or lesions, to prove that puerperal fever is a distinct disease of the zymotic class. As stated by Dr. Barker himself, the only *constant* phenomena of the disease are those common to all fevers—rise of temperature, frequency of the pulse and respiration. An initial chill; abdominal pains, tenderness, and distension; vomiting and diarrhœa; a furred, dry, and cracked tongue; cerebral disturbances; scanty foul lochia; diminution or non-appearance of the milk secretion—are all noted as more or less common, but not constant symptoms. There is no "positive definite symptom by which puerperal fever may be recognised." In reference to lesions, we find it stated that "puerperal fever has no characteristic anatomical lesions. There is a great variety of structural lesions found, the most frequent of which are those of the peritoneum, those of veins of the uterus, those of the inner surface of the uterus, and those of the lymphatics. But these lesions are not uniform or constant." They vary in different "epidemics." "The most malignant form of the disease, that in which a fatal result occurs the most speedily, offers the fewest and least striking structural lesions. . . . This would seem to prove that the lesions are consecutive or secondary; and that there is a primary disease, an original cause of vital depression, which sometimes destroys life so rapidly that there is no time for

the development of the secondary morbid alterations." These facts are rightly urged as invalidating the theory countenanced by some writers, that the general symptoms depend on local inflammations. Surely they argue even more convincingly against a theory which would assign one uniform cause for results which are constant only in their inconstancy. Is it possible that we have here a specific fever the only constant symptoms of which are those common to every fever; which has no special symptom, grouping of symptoms, history, or structural lesions by which its specific nature can be recognised or proved?

Dr. Barker bases his belief in a distinct puerperal fever upon the inadequacy of the septicæmic theory, as understood by him, to account for all the phenomena. At best such an argument cannot be regarded as a strong or convincing one; as it is all the weaker in the present instance, since by septicæmia Dr. Barker evidently understands only its least frequent and serious form, that of septic poisoning. Nowhere does he appear to have himself grasped, or to present to his readers, the essential difference—in causes, symptoms, course, and lesions—between cases of "septic poisoning," "intoxication," or "absorption," and those more frequent and serious ones of "septic infection." In his chapter on Puerperal Septicæmia he recognises that there are two sources of infection—auto- and heteroinfection, but he fails to differentiate the different types of disease in which they result. The phrases, "septic infection," "putrid infection," and "septic absorption," alternate with one another in his essay, apparently for no other purpose than that of saving a verbal reiteration. The details which he gives of puerperal septicæmia, and the arguments he uses, are such as can only apply to septic poisoning, or the non-infective form of septicæmia. Thus he states that the symptoms and gravity of the fever depend on the amount of septic material absorbed—a fact in regard to septic poisoning, but of very limited, if any, truth if applied to septic infection. Again, Billroth's description of septicæmia is appealed to as showing that it cannot be applied, *mutatis mutandis*, to puerperal fever. But this description is distinctly one of septic poisoning, not of septic infection, which is that form which has been most clearly identified with the so-called puerperal fever. There can be no question that Dr. Barker's "Essay on Puerperal Septicæmia" was, at the date of its first publication, quite on a level with, if not indeed in advance of, current knowledge. We can only regret that his most recent expression of opinion practically amounted to

the statement that no further advances were since possible in this direction.

Bearing in mind, therefore, these initial objections to the nature of his argument, we may briefly view the separate reasons which he has given. These reasons he has arranged under three headings:—

(1.) "The septicæmia doctrine is incompatible with the authentic facts that puerperal fever is contagious and infectious. Those who believe that puerperal fever is identical with septicæmia, deny that the disease is really contagious, although they admit that it is manually transferable." Dr. Barker proceeds to show that "puerperal fever" commonly tracks the practice of a single nurse or physician, "while in the same neighbourhood, village, or city, the disease is not met with." Dr. Barker does not, unfortunately, define what he means either by "contagious" or "infectious," nor does he offer any proof beyond his statement that a series of cases occurring in one nurse's or physician's practice, results otherwise than by the manual or instrumental transfer of the poison from the genital tract of one patient to that of another. By such transfer the disease is propagated, and in such a sense only has it been securely established that puerperal fever is contagious or infectious. Schroeder and other German writers decline to apply the term "contagious" to this disease, "for by a contagious disease is meant one in which a specific poison is generated within a diseased organism, and which, conveyed to other individuals, always produces the same specific disease." They deny that puerperal fever, which is identical with puerperal septicæmia, is a specific disease. It is caused by the actual grafting of some form of septic material on the genital passages during or after labour. This cause is amply sufficient to explain those series of cases occurring in hospital or private practice which have been loosely termed "epidemics." Moreover, it may be pertinently asked—Is there any other specific fever, both infectious and contagious, which is ever characterised by so remarkable a trait as that of originating *de novo* and subsequently remaining limited in its spread to one man's practice?

But septicæmia does not follow the footsteps of a surgeon as puerperal fever does those of an obstetrician, and, Dr. Barker argues, "this one fact alone is sufficient to demonstrate that the diseases are not identical." Yet the whole of modern surgery has been revolutionised by the practical acceptance of the doctrine of germ-infection and the rigorous precautions adopted for the prevention of septicæmia and its allied diseases. A surgeon who, fresh

from a case of erysipelas, or from the *post mortem* examination of a puerperal fever patient, would venture, without the strictest antiseptic measures, to perform an ovariectomy, would quickly manufacture for himself an initial case of surgical septicæmia. And if he were to perform twenty more abdominal sections during the succeeding month, making autopsies of his cases as he proceeded, who can doubt that the initial case would quickly grow into a private "epidemic?" The parallel is not so strained as it may at first sight appear. It must be remembered that cases in obstetric practice follow one another rapidly, and that the physician who is unhappy enough to have a puerperal fever patient under his care must bring his hands into daily contact with septic infective material of the most virulent kind. If he continues his practice under such circumstances he puts himself in the same position as the surgeon. The results would in both series of cases be as identical as the diseases. The only surgical operations which, in relation to the possibilities of septic infection, can fairly be compared with midwifery practice are those which deal with serous membranes, more especially such operations as ovariectomies. The marvellous successes of recent abdominal surgery have only been attained through the recognition of the main dangers attending it—those of septic infection or absorption; and to such dangers the vascular, nervous, local, and general conditions of the puerpera peculiarly expose her. To state, as Dr. Barker does, that ordinary traumas offer much larger absorbent surfaces than those of puerperal wounds, is to ignore in a most unaccountable manner not only the special conditions of these latter, but the universally admitted fact that the characters and sites of wounds have much more influence upon this question than their mere extent.

(2.) "Puerperal fever differs from septicæmia in its origin, its mode of attack, and its symptoms. The former disease originates from epidemic causes, from contagion, and from infection; the latter from nosocomial malaria, from autogenetic infection, and from direct inoculation." In this statement I can find nothing more than a mere verbal antithesis. I have already alluded to the subject of epidemic causes, which, however, it is surprising to find assigned such a prominent place in the ætiology of puerperal fever by an author who has only just dwelt upon its characteristic trait of remaining limited to the practice of individuals. "Contagion" and "infection," when used as distinct, are words which require definition, but in a very common sense they may both be applied

to the infective form of septicæmia. "Nosocomial malaria" has elsewhere been assigned a place by Dr. Barker among the causes of "puerperal fever," and I am unable to separate "autogenetic infection" and "direct inoculation" from infection and contagion of some form.

As a proof that puerperal fever and septicæmia are not indetical, Dr. Barker urges that—"The symptoms of puerperal fever are frequently manifested a day or two before or during labour, even when the child is subsequently born alive. . . . But in septicæmia the symptoms are never observed before or during labour, except when the foetus is putrid, as a traumatic lesion is a necessary element for the absorption of septic material." Such cases as those alluded to do undoubtedly occur, but only quite exceptionally. The conclusion sought to be established from them must in any case depend upon the two alternatives offered being the only possible ones. The major premiss, suppressed in the argument—viz., that "in such cases the symptoms must result from specific puerperal fever or from septicæmia"—is unfounded, or at least unproven. Nor is it quite accurate, with our present knowledge, to state that traumatism is a necessary antecedent of septicæmia in any form. Dr. Barker himself records instances in which septic poisoning occurred without traumatism as a result of the death and putrefaction of the foetus within unbroken membranes. Apart from this fact, however, vaginal examinations made towards the close of pregnancy reveal, in the greater number of cases, such an abraded state of the cervix as would make it a fitting nidus for the deposition and growth or absorption of septic material. It is, therefore, quite possible for a septicæmia to originate as a result of local examinations made before labour, and some of these very rare cases may be thus explained. Others are most probably cases in which some one of the exanthemata chances to fall about the time of labour, and has its subsequent course and symptoms so modified by the advent of labour and the puerperal state, that it assumes a more or less markedly puerperal type. It may be further complicated by toxæmic or septicæmic conditions, and eventuate fatally before characteristic proofs of the primary condition show themselves. Despite the interest and importance attaching to these cases, we have very little precise information regarding them. Much light might be thrown upon the subject by a collection of accurate and complete records, including, where possible, *post mortem* details of as many such cases as possible. In default of such particulars the

explanation given appears to me to be the most reasonable, and accords with the only cases of the kind which I have myself met. In one of these the fever proved to be typhus; in another, scarlatina, which became complicated by septic poisoning, and proved fatal; and in two others, smallpox, which ran a malignant course in both instances. Dr. Barker's explanation is a curious one—admitting, as it does, that a fever which is peculiar to a puerpera may occur also in a grvida. If this be so, and the fever be contagious, infectious, and epidemic, as he believes, ought we not to find pregnant women, equally with puerperæ, dying of this particular result of “epidemic influences?”

(3.) Dr. Barker's third argument against the doctrine of septicæmia consists in the alleged fact that the infants of mothers suffering from “puerperal fever” never show symptoms of septic absorption through the umbilical stump, or through the wound left by a circumcision. The latter wound, he states, “offers a greater exposed surface for the absorption of septical material than the lesions of most puerperal women”—an extraordinary statement, when we consider the entirely different nature of the wounded surfaces in the two cases, the much greater frequency with which septicæmia follows a contused or lacerated than a cleanly cut wound, and the numerous other conditions which favour septic infection and absorption along the genital tract of a puerpera. Apart, however, from these considerations, the infants of mothers suffering from this disease do not infrequently suffer from septic infection. Such cases have been specially recorded by Lorain, Hecker, Buhl, and Winckel, and I have myself seen one infant who died from a pyæmia, with numerous abscesses, contracted under such circumstances.

Dr. Barker mentions erysipelas and trismus as diseases of infants which occur in conjunction with puerperal fever. Why, it may be asked, should these diseases, whose common predisposing causes are to be found in want of cleanliness, defective ventilation, and over-crowding, and which start almost constantly from the umbilical wound, be associated so closely with such a disease as Dr. Barker understands by puerperal fever? The conditions which favour their development and their source of origin clearly identify them much more closely with puerperal septic infection. So far as concerns erysipelas, the intimate relationship between its virus and that of some forms of septic infection appears decisively to indicate its appearance in the new-born as the consequence of the latter disease in the mother. Again, these diseases of the new-born occur

almost exclusively in connexion with hospitals, and have been especially connected with outbreaks of maternal disease. Like septicæmia, they are rarely met with in private, and have been progressively diminishing in proportion as greater attention has been given to general and special hygienic details. The following history, quoted from Dr. Lewis Smith's "Diseases of Infancy and Children" (4th edition, p. 336), is one of unusual interest in this connexion:—In making a *post mortem* examination of a man who had died from an acute and obscure disease of the knee, Dr. C. (partner of the narrator), "pricked his finger, and, experiencing little inconvenience from it at first, he attended a case of confinement on the following morning. A few hours later he was taken sick, and I took charge of the lady, who died in three days with a tumid abdomen and the symptoms of childbed fever. The infant of this patient was seized, when two days' old, with erysipelas, . . . terminating fatally in one day. Dr. C.'s finger became swollen and painful, and the lymphatics of the forearm and arm became inflamed, presenting red lines, and the axillary glands suppurated. Though feverish and prostrated, there was no appearance of erysipelas in his case. In about two weeks he resumed practice, and, as at that time physicians were not fully aware of the danger of communicating puerperal fever, he attended two, three, or four patients a week, until the number, reached fifteen. All the mothers died with symptoms of metro-peritonitis, and all the infants had erysipelas, commencing on the face or some part of the body, on the second or third day after birth, and in all terminating fatally within a week. This sad record was ended by the doctor's temporarily retiring from practice." Here we have unmistakable evidence of the traumato-infective nature of the disease, which affected, in turn, the physician with a spreading lymphangitis of the arm, the puerperæ with a rapidly fatal childbed fever, and the infants with a fatal erysipelas.

I have advisedly dwelt at length upon this question of a distinct specific puerperal fever, because it is in itself one of paramount importance, and because the various arguments which have been urged both for and against the existence of such a distinct entity possess a general quite as much as a special value. I feel, moreover, how much more easily men are tempted to adopt "fresh woods and pastures new" when they have once learned the nakedness of old belongings; and I cannot but think that anyone who examines this question without bias will feel himself coerced into finally abandoning

the view for which Dr. Barker has done all that an advocate can do, and in affirming which he goes so far as to state that "he must die impenitent."

[To be continued.]

ART. XVI.—*A Specimen of Seventeenth Century Physiology and Medical Jurisprudence; being an Extract from Salmuthus' Commentary on Pancirollus.* Translated by HENRY KING, A.M., M.B., Ex-Sch. T.C.D.; Dep. Surg. Gen., Retired.

GUIDO PANCIOLOLI was an Italian jurist and literary man, born at Reggio in 1523. He was a pupil of Alciati, an eminent man, to whom reference is often made in the work from which the following pages are an extract. He taught Roman law at Turin, and subsequently at Padua, where he died in 1599. Besides several valuable works upon his own special subject, he wrote two books—"Rerum Memorabilium," published at Amberg, in 1599 and 1607, and in French translation, at Lyons, in 1608. The first book treats of "arts and practices which were in use in ancient times, but now are either altogether unknown or are fallen into desuetude;" and contains sixty-five short chapters, each devoted to one subject. The second book is entitled "Nova Reperta; sive Rerum Memorabilium recens inventarum et veteribus planè incognitarum;" and in twenty-five chapters handles very briefly such discoveries as the New World, sugar, clocks, the compass, Greek fire, silk, and printing.

These books were written in Italian and translated into Latin by Heinrich Salmuth, an advocate, of Amberg (near Nuremberg), who added notes or commentaries, which bear the same relation to the text as "the intolerable deal of sack" bore to the bread in Falstaff's bill. Thus, the tenth chapter, "De Horologiis," occupies little more than half a page, while Salmuth devotes no less than sixty-four pages to his commentary upon it. The following extract is taken from the latter, and will, I trust, be interesting, as showing what scientific men found themselves able to believe at the time when it was written. Salmuth's preface is dated Jan. 1st, 1629. It will be seen that in discursiveness and irrelevance not even a modern extempore sermon can surpass these commentaries. In wealth of quotation and reference they remind us of Burton. His Latinity is sometimes crabbed—at least I prefer to ascribe my occasional inability to understand him fully rather to his obscurity

than to my own ignorance of his adopted language. The book in my possession was printed at Frankfurt in 1631:—

“ But also in the recognition of legitimate children, with reference to inheritance, observation of Time is of very great moment; that the month [of gestation] in which any one hath been born should be considered. Which matter hath been handled by the Commentators with such variance of opinion and diffuseness that you cannot easily find what to follow without hesitation. Commonly, however, I see agreement in this—that if the question should be concerning the shortest period of human gestation, the seventh month is established as the limit, reckoning being made from the time of marriage or of intercourse. For, as Paulus decided, it is now an accepted fact, on the authority of that most learned man, Hippocrates, that perfect offspring may be born in the seventh month; and hence we must believe ‘That he who is born in the seventh month, of a legal marriage, is a legitimate son’ (*l. 12 de statu hominis*), which you will rightly take to refer to lunar months, with Alciatus^a (*l. Gallus. nu. 29 ff. de liberis et posthumis*); especially as Ulpianus^b tells us that the same Hippocrates had written that he who is born on the 182nd day appears to be born at a lawful time (*l. intestato 3 fin. de suis et legit. hæred.*), for which mode of reckoning Franciscus Vallesius^c gives an ingenious reason; to which pertains that which Herodotus (*lib. 6*) hath written concerning Aristo, King of the Lacedæmonians, when it was told him that his wife had borne a son before the completion of ten months from her marriage; that he made oath before the Ephori^d that that child did not seem to be his which was not born after the legitimate number of ten months. When, afterwards, this proved hurtful to the son, King Demaratus, Demaratus, after his condemnation,

^a Andrea Alciati, born in the Milanese in 1492, died in 1550; taught and practised law in Milan, &c., and produced works on law and philology. Pancirolli studied under him.

^b Domitianus Ulpianus, a Roman jurist, murdered in Rome by the Prætorians, A.D. 228. He was one of the five great lawyers who, Theodosius II. declared, should be consulted before all others.

^c A Spanish physician of the 16th century, private medical attendant of Philip II., who left many valuable works on medicine.

^d Aristo was married twice, without issue. While the second wife was still living he obtained, by loan or otherwise, the wife of his friend Agetus, who bore a son before the tenth month. The news was brought to Aristo while he was sitting in judgment

appealed to his Mother under oath and imprecations to say *whether he was the son of his father Aristo?* and the Mother answered that Aristo had done foolishly, for that Women do not always bring forth in the tenth month, but both in the ninth and in the seventh; that he assuredly was born in the seventh month, but begotten by the god and hero Astrobacus, by whom she had been debauched through craft and false appearance—most familiar subterfuge with the women of olden time! as saith Petrus Ærodius (*lib. 2, Rerum judicatarum, Tit. 4, cap. 1*). But, how great is the force and

Power of the number seven. power of the number Seven, Bodinus* learnedly explains in his *Methodus historica, cap. 6, fol. 238*,

where he teaches that Seven was called the *sacred number* by the Hebrews. And this meant they, saith he, that the affairs of men do not happen confusedly or fortuitously, as the Epicureans assert; nor by inviolable fate, as the Stoics; but by divine foresight, which, although it hath bound together all things in admirable order, movement, number, harmony, figure, nevertheless sometimes changeth them at its will and pleasure, as Isaias writes of Ezechia, to whom, at his entreaty, God granted prolongation of life, and foreshowed that the sun would retrograde; sometimes, indeed, He is said, in Holy Scripture, to hasten on time for the punishment of crimes, or through compassion, as Paulus writes, concerning the Oracle of Helias, that men

God acting in all freedom. may understand that God is bound by no numbers nor by any necessity, but is free from the laws of nature, not by decree of senate or people, but by His own.

For, inasmuch as He Himself ordered the laws of nature and holds His authority from no other than Himself, it is fitting that He,

with the Ephori. He counted the months on his fingers, and remarked that the child was none of his. No importance was attached to this *obiter dictum*, and he himself forgot his doubts, and became fond of the boy, calling him Demaratus, the Desired of the People. Demaratus succeeded to the throne, but did not get on with his co-king Cleomenes, who revived the old slander, contested his legitimacy, bought a decision against him from the Delphic oracle, and finally expelled him. Demaratus then appealed to his mother. He had misgivings that a certain ass-feeder was his father, and his mind must have been much relieved to find, on the highest authority, that he was a more respectable kind of bastard than he had feared to be.

* Bodin was a magistrate and author, born at Angers, in 1530. His *Methodus ad facilem historiarum cognitionem* is very unmethodical and unreliable. He attributes the governments, the arts, and the religions of peoples to the climate. In his *Demonomanie, or Traité des Sorciers*, he says he knows a man (probably himself) who had, like Socrates, a familiar demon, who had a way of touching his right ear if he did well, his left if ill. He was, however, the father of political science in France, and, if we except Machiavelli, even in Europe.

freed from His own laws, should decree concerning the same things differently at different times, &c.

“Plinius (*lib. 7, cap. 5*) denies that a foetus born before the seventh month is ever viable; although Renatus Choppinus,* an advocate of the parliament of Paris, asserts that, by a Paris decree, a father

Five-months' birth.

was declared to be heir of his son born in the fifth month (the mother's belly having been cut open), and seen to have breathed (*libr. 3, de privileg. rusticor. cap. 8*).

For it sufficed to the father, for succeeding to this inheritance, that he who had been cut out had been born breathing (*l. quod dicitur. 12 ff. de liber. et posth.*), and so had wholly entered the world alive, and even for a moment had survived his mother, although immediately after he fell upon the ground, or in the midwife's hands, he might have died (*arg. l. quod certatum. 3, in*

Falling on the ground.

fin C. de posth. hæred. instit.); in which place Justinianus, in those words, ‘fell upon the ground,’ undoubtedly alluded to that primitive custom by which

the child, as soon as it had been taken away by the midwife, was placed upon the ground, that it might be duly dedicated, as is seen

The Goddess Statina.

in Varro, *lib. ii, de vitâ pop. Rom.*: which placing of the child upon the ground was sacred to the goddess Statina, as presiding over childhood, as is inferred

from that passage of Tertullian's *De Animâ*, ‘Since, also, the first placing of the child upon the earth is sacred, *statim Aedæ.*’

For that, instead of those latter words, should be read *Statinae Deæ*, Cujacius^b rightly advises (*lib. ii., Observ. c. 30*). Moreover the father was accustomed to raise and take to his bosom the infant so placed or laid upon the ground. Thus, Papinius, in his lament for his son—

— meus ille meus, tellure cadentem
Excepi, et vinctum geniali carmine fovi.

And Johannes Bernartius confirms the same by very many authorities (*ad lib. 1, Thebaid. Statii*): ‘But as the Romans were wont to place newly-born infants on the ground, so we read that the Lace-

Infants washed with cold water.

dæmonians hardened the bodies of their children to the endurance of heat and cold by cold water, which they used to call the *Lacedæmonian unguent.*’ Whence Virgilius—

Durum a stirpe genus, natos ad flumina primum
Deferimus, sævoque gelu duramus et undis.

* René Choppin, a French jurist, 1537–1606.

^b Jacques Cujas, founder of the modern study of law; born in Toulouse, 1522; died in 1590.

Which Seneca, too, confirms, when in his *Suasoria* he says that the river Eurotas, which flows round Sparta, hardens boyhood to the endurance of future warfare. The Germans also were used to plunge their new-born sons into the Rhine, but to this end, that they might thus put to proof the chastity of the mother. For such was affirmed to be the nature of the Rhine that it would carry up against the stream, unhurt, into the mother's trembling hands, lawful offspring—a witness, as it were, to her unstained chastity; but, as a righteous punisher of adultery, would swallow up the issue of illicit love. Hence, Claudianus (*lib. 2, in Rufinum*):—

Inde truces flavo comitantur vertice Galli,
Quos Rhodanus velox, Araris quos tardior ambit,
Et quos nascentes explorat gurgite Rhenus.

To which refers that line of Gregorius Nazianzenus—

'Ὡς νότον εὐγενέου Πηνὸς κριθέντα πέδους.

'doomed spurious by the streams of noble Rhine.' And that belief in its divinity led, peradventure, to giving a religious meaning to its name also; so that it should be called *Rhenus*, not from the brightness of its pure and limpid water, but from the unstained purity of the marriage bed, concerning which the judgment lay with it. For which cause it is called in two places, by Nonnius, in the *Dionysiaca*, '*Πηνὸς Ἰβηρ*, a word purely and simply German, as though you should say—jealous, or burning with jealous zeal—for so meaneth *eyver* with us Germans (Hadrianus Julius, in his *Batavia*, *cap. 8*). Although Galenus (*lib. i., Salubria*) severely rebukes the Germans and Celts, on account of that custom, so far that he excludes them from his precepts upon the healthy way of living, in harsh, not to say abusive, language :—'Among the Germans,' saith he, 'I should not even believe that infants are reared at all, seeing that they carry down to the freezing river their newly-born little babes, even while just falling from the womb. But,' he goeth on to say, 'we blame not Germans, or other rustic or barbarous men, any more than bears, boars, lions, or other hrutes of that kind; but Greeks, and those who, although they be barbarous in race, yet emulate the manners of the Greeks.' Yet

Galenus inveigheth against the Germans. *Whom Langius defendeth.* Johannes Langius* splendidly defends the Germans; opining that Galenus, by these words, was attacking

* Jean Lange, a German physician, 1485-1565; studied medicine at Bologna, whence he went to Pisa, settling ultimately at Heidelberg. His works are said to be worth reading, even at the present day, for their enlightened views on some medical questions.

only that barbarous practice which I have told of, in the bringing up of their children : — Whom the same Langius (in the preface to his *Epistolæ Medicinales*) describes, as in other respects, either superior, or at least not unequal, to the Greeks, in the fortitude of their manly spirit, and second to no nations in brilliant endowments of intellect for the acquisition of wholesome learning. However, the practice is far more tolerable than that barbarous and inhuman custom of the Huns, whose mothers, as Jornandis^a affirms, in his book, *Rerum Gæticarum*, were wont to cut with a knife the cheeks of their male infants, while still at the breast, and to punish them cruelly when they squalled, that they might learn, even in the cradle, to bear wounds, and might be destitute of outward beauty in their youth, and grow old beardless; readiest to mount the steed and hurl the javelin; active and stern; of countenance dark and fierce; of aspect harsh; horrible of voice; and with face purposely disfigured, so that thou mightest suppose them an air-born brood of Demons.

“ But as regards the time of bringing forth, Fr. Valesius writes, in his remarkable work, *De sacrâ Philosophiâ*, c. 18, that, not long before, a girl had been born, undoubtedly in the fifth month, who was then alive, more than twelve years old, whose slenderness and tenuity, greater than was usual in women, would have shown that belief in the story of her birth was well founded; besides, that it was established by the witness of many dwellers in the house and by no unmanifest proofs. So that in the variations of physical things scarce anything at all is absolutely impossible or inevitable! But perchance there is danger, lest if that possibility should be admitted in all circumstances, contrary to the ordinary laws of nature, a viable offspring might be obtruded, even in the third month after marriage. It is certain that that Greek versicle

was commonly tossed against Augustus—*τοῖς εὐτυχούσι καὶ τριμῆνα παῖδια*, the rich have even three-months' offspring.

children. For although the Pontifices, being consulted by Augustus, whether Livia Drusilla (whom, as Suetonius writes, Augustus took away from marriage with Tiberius Nero, even, indeed, when she was pregnant,^b and loved her, and approved her,

^a Jornandès, or Jordanès, was a Gothic historian, of the middle of the sixth century. He compiled a work, *De Getarum sive Gothorum Origine et Rebus gestis*; chiefly extracted from Cassiodorus' History of the Goths, now lost.

^b Six months.

to the exclusion of all other, and with constancy) might lawfully be wedded to himself, she having conceived, but not yet given birth to an offspring? had replied 'That she might, of course, it being admitted that she was already pregnant by her first husband; otherwise, if that fact were doubtful, that she might not.' Nevertheless, it was likely that he who so hurried on Livia's second marriage had tasted somewhat of her, even while her first husband was alive. Nor is that unknown, which is current everywhere, in the proverbial story about the *Cradle-buyer*, who, when he had

The Cradle-buyer.

married a wife who produced a fine little baby in the second or third month after the wedding, bought up five or six cradles, in provision for so many infants in the year, should, perchance, his wife thus go on producing every two or three months (Boetius,^a *Ep. ad l. Gallus. in princ. ff. de liber. et posthum. nu. 83*). But, perhaps, what Ferdinandus Mona writes in his *Commentaries* on Hippocrates' work, *de septimestri partu*, concerning seven-months' children, deserves more credit—that viable children had been born in Spain in the fifth month.

Eight-months' children.

"What opinion, then, shall we give concerning the eighth month? Although Gellius states that it is an accepted truth that human offspring is never born in the eighth month, yet afterwards he himself adds that it had been carefully and anxiously inquired at Rome—a matter of no trifling importance demanding it—whether an infant put forth from the womb in the eighth month and straightway dying had completed the *jus trium liberorum*.^b For to some the unreasonableness of the eighth month seemed to imply an abortion, not a birth. And if a child might occasionally be born in the eighth month, yet it was not viable, on account of the incongruity and disconnection of the months and constellations, as say the Mathematici; and therefore that the birth is imperfect. For the odd number corresponded to the male, the even to the female, as the Pythagoreans thought, and consequently, inasmuch as the seed is compacted and agglutinated from man and wife, a

^a This celebrated philosopher and statesman flourished between 470 and 526. He fell into disfavour with the emperor Theodoric, had his property confiscated, was thrown into prison, and finally put to death.

^b These who had, in Rome three, in Italy four, or in the Provinces five, children, enjoyed certain privileges under the provisions of the *Lex Papia Poppæa*, which ordered, also, that the candidate with more should be preferred to one with fewer children. The law was passed A.D. 9, amending and supplementing Augustus, *Lex Julia de Maritandis Ordinibus*, which came into operation B.C. 18.

perfect animal could be formed only when the months of each were fulfilled.* Further, that the ancient Romans had not acknowledged these almost monstrous exceptions, nor supposed that any γένεσις occurred in the course of nature other than in the ninth or tenth month. Hence, to the Parcæ, whom they named, from

Parcas.

partus, they had given the title 'Nonæ' or 'Decimæ,' not 'Octavæ.' If sometimes it should fall out otherwise, yet that laws are adapted to circumstances which generally, not which rarely, happen. Finally, that to some extent adultery and inheritance-hunting be encouraged in women if all months are so readily made lawful to them. On the opposite side, others asserted that it was a grave matter if it should profit a mother not at all to have borne offspring chastely and lawfully. In a doubtful case the presumption should be in favour of marriage; otherwise harmonious unions would be dissolved if mere reckoning of months should make a birth legitimate or illegitimate. When it was granted that a child born in the seventh month was legitimate, why should not one which was further advanced by another month be so esteemed?

Naxian women.

The Naxian women were cited, who all were delivered in the eighth month; and the same was common in Egypt. Now, too, in Italy, such births were viable, contrary to the opinion of the ancients. So, also, *Cæsonia*, wife of the prince Caius, was born of her mother, Vestilia, in the eighth month. That at the present day it sufficeth for a son to benefit his mother that she should once have given birth to him alive, so that he could be called a son, even though he should have died immediately after birth; that, therefore, it made no difference how long or how short a time he might be able to live, whether he were born in a more lucky or more unlucky month. And although Gellius doth not determine this question, yet it is highly probable that here, too, the view which Hippocrates held doubtfully but Aristoteles positively was victorious (which Cæcilius the poet, and M. Varro and Polybius and Diocles the empirics adopted, as Plutarchus affirms), to wit, that a perfect, though rather weakly, offspring may be born in the eighth month; and, therefore, that it had fulfilled the *jus trium liberorum*; as P. Ærodius has recorded in his *lib. 2 Rerum Judicatarum, tit. 4, cap. 2*, out of Gellius perhaps, *lib. 3, Noct. Atticarum, cap. 16*, and Plinius, *lib. 7, Naturalis Historiæ, cap. 5*, to which should be added what the Jesuit Martinus

* The meaning appears to be that as eight cannot be made up of an odd and an even number, the sexes cannot be represented in an eight months' fetus.

del Rio has written (*lib. 1, disq. Magicarum, cap. 4, q. 7, lit. B*), concerning eight-months' children, why they should be very rarely viable. But as to what we said above of the Naxian women, that rests on the authority of Asclepias, who eloquently writes that they produce *ὀκτόμηνα*—that is, eight-months' offspring, either by the gift of Juno, who bestowed that favour on the island on account of her goodwill to Dionysus, or because Bacchus himself was born in that period. For on this account Naxos was called the Dionysian, although Plinius be pleased to think that it was so called rather

Fountain from the fertility of its vineyards (*lib. 4, cap. 12*),
flowing with since even a fountain therein is said to flow with
wine. wine exceeding sweet (Coel. Ludov. Rhodig.^a *lib. 22,*

Lectio Antiq., cap. 13), with such faith, no doubt, as that where—
A river of with Diodorus Siculus writes that from a very dense
silver. wood, on a peak of the Pyrenees, soaring above the limits of the very clouds, and almost within hearing of the counsels of the gods (and from this wood the hill is named), streamlets of pure and molten silver flowed in every direction, which story Athenæus (*lib. 6, Dipnosoph, cap. 4*) told also, of those mountains which formerly were called Riphœi, afterwards Obii, but now the Alps in Gallia, from which, when a forest therein spontaneously caught fire, streams of silver flowed freely through the land; from which source the Phœnicians, when they were sailing to Tartessus in Hispania, without any trade acquired so much silver that they were obliged, lest their ships should founder, to make anchors of silver: if that be true which Stephanus Forcatulus hath boasted concerning the wealth of his native Gallia in his book *On the Empire and Philosophy of the Galli*.

“Nor, methinks, should it here be concealed that those untimely
Exterricinei. births are called by Festus *exterricinei*, as if the mother in terror had expelled them from her womb. The Greeks call them *ἡλιτομήνοι*, as it were *missing the right month*. So Coelius Rhodiginus (*lib. 2, Antiq. lection., cap. 13*) elegantly calls those women *Epitoca* whose time for delivery is close at hand. So those, not whose head but whose feet had been first protruded
Agrippæ. on being born (which labour is esteemed most difficult and severest), were called *Agrippæ*, a word compounded

^a Lodovico Ricchieri, born at Rovigo (*Rhodigium*), about 1450, an Italian philologist. He left 16 books, *Antiquarum Lectionum*, ranging over every branch of human knowledge, but chiefly occupied with philological discussions on extracts from ancient writers.

of *ægritudo* and *pes*, or else derived from the difficult birth, as you would say *ægre-parti*, as Plinius thought (*lib. 7, cap. 8*). For children in the womb, saith Varro, rest with head lowest, feet raised up; not as is the nature of man, but as is that of a tree; for the branches he calls the feet and legs of a tree, the root and stem the head. When, therefore, saith he, it happens that, contrary to nature, children are turned upon their feet, with arms widely spread, they are wont to be retained in the womb, and then women bring forth with more difficulty. For, in deprecation

Postverta.

of this peril two altars were built at Rome to the two Carmentæ, of the which one was named *Postverta*, the other *Prosa*, from the meaning and name of both direct and abnormal birth (Gellius, *lib. 16, Noct.*

Prosa.

Atticæ, cap. 16; Coelius Rhodiginus, *lib. 15, Antiq. Lect., cap. 22*). Such and so great, then, being the peril of childbirth, so that Leo (*Novella, 17*) says that death stands before the doors of women in labour; and Justinianus (in § *Sed nos Instit. de SC. Tertull.*) mourns that death from this cause often comes even upon matrons (who on this account are said to labour hard—*Novella, 156, cap. 1*), deservedly shall the Illyrian women be called happy, whose labour, Varro testifieth, is exceeding easy (*lib. 2 de Re rusticâ, cap.*

Illyrians have easy labors.

10). For in this Illyrium, saith he, the pregnant woman often, when the time to bring forth has come, departs to no great distance from her work, and there having been delivered, brings her offspring back, which you would suppose she had rather found than brought forth. So the women of the

Indian women.

Canarese, in India, aided by no midwife, even alone, produce their infants. Thus (saith Johannes à Linschoten in his *Navigations, cap. 39*), when I was once walking through the villages of the Canarese, and desiring to drink, with excessive burning thirst, a woman appeared, alone in her house, who had a linen cloth wound round her body, while at her feet stood a wooden bowl filled with water, and in it she, just delivered, was washing her babe, which then, placed on leaves of the banyan, she laid upon the ground, begging of me that I should wait and she would bring me water fit to drink. But when I thought of the pollution of so recent a delivery, my greediness for a drink departed until another house should appear. Afterwards the same woman was seen by us running hither and thither around her little dwelling, free from all pain, and untroubled by her late delivery. To whom you might not inappropriately add the parent

The Mother of Apollonius. of Apollonius of Tyana, who, overcome with sleep in a flowery mead, amid a concert of surrounding swans, and under the breath of Favonius, on awaking gave birth to a son without obstetric aid, who, when he became a man, so excelled in philosophy or magic that by some he was worshipped as a god, and his shrine, established under the name of Hercules Alexicacus,

Philostratus. was honoured by the Ephesians, if what Philostratus^a has written about him be true, who, in other matters, is the greatest liar of all who have written history, in the opinion of Coelius Rhodiginus (*lib. 17, Antiq. lect., cap. 13*).

Encomium of Apollonius of Tyana. Apollonius of Tyana, however, is esteemed by Cassiodorus an illustrious philosopher, while Suidas (in his *Thyaneus*) describes him as a wise man of widespread

renown and authority, a veteran Philosopher, learned in all things, himself also adored as a God. Whom Hierocles the Stoic impudently dared to place on a level with Christ; against whom Eusebius published a book, which see; and in an ancient

Apollonius. inscription at Rome he is called a prophet, as Savaro^b notes (*ad Sidon. Apollinaris, Ep. 3, lib. 8*). More-

over, Apollonius flourished under Nerva, as Grecian records testify; in whose praise also I see it written that in his years of youth he so restrained and crushed incentives to venereal pleasures and the titillations therefrom stinging and twitching, that most remarkable chastity was recognised in him, from which he never swerved or departed. But Damis also affirms that Apollonius, by virtue of a ring given him by Jarchas, chief of the wise men of India, exhibited the brightness of Youth, although he had already passed his hundredth year. Nor was the Platonic Olympiodorus ashamed to write that Apollonius of Tyana, by the strength and power of his senses, had seen, as in a bright mirror, while he was living in the City, what was going on

Knowing the language of birds. in Egypt. There are some who say that he knew the language of animals, Porphyrius especially writing (*lib. de Sacrificiis, 3*) that he, being in a company of his

friends, when he heard a swallow tell the other swallows that a laden ass had fallen near the city, and that wheat was scattered on the ground, declared what he had heard, and that the fact

^a The author thus unflatteringly described was a sophist of the second century, born at Lemnos. His principal work was the *Life of Apollonius of Tyana*, which is said to be rather a philosophical romance than true biography.

^b Jean Savaron, a French historian, of Clermont, 1550-1622. He edited *Sidonius Apollinaris*.

was found so to be; though Philostratus has related that it was not a swallow but a little Sparrow. Ennapius, however, agrees with Philostratus, and this version is thought to be more probable, for a Swallow does not feed on corn. Plinius (*lib.* 10, *cap.* 49) clearly asserts that Democritus wrote that some Birds have a fixed language, and that from the mingled blood of these birds a serpent springeth, which whosoever eateth will interpret the tongues and colloquies of birds; which, however, does not seem likely to Gellius, who thinks ‘That many inventions of this kind have been given out in the name of Democritus by ill-informed men, using his celebrity and authority as a shelter’ (*lib.* 10, *Noct. Att.*, *cap.* 12). Nor are men wanting who think that that figment of Apollonius’ understanding the chattering of birds is like the stories which the ancients told of Tiresias and Melampus. But these things are incredible, saith Martinus del Rio the Jesuit. For since beasts want reason they cannot use discourse: which, however, is needful for the intentional use of speech—speech, I say, expressive of things or events (*lib.* 2, *disqui. Magic.*, *q.* 19, *fol.* 168); in

*Whether
animals of the
same kind
understand
each other?*

which place also he examines this question: whether the lower animals of the same species understand each other? And as to the corporal actions and motions of beasts, daily experience gives us an affirmative answer. As regards other things, too, Porphyrius hath opined and striven to prove that birds have understanding of the voice and song of their own kind of birds, and that they can indicate to others what may have been suited to themselves. The same opined Plato, and Oppianus discoursing on Elephants; because if an Elephant should have fallen into a slough and cried out, his fellow, perceiving it, goes away and comes back bringing a herd of elephants to aid by their common efforts the sunken one. The Lybian Surpius [?] may be an example, which, when he had not strength by himself to beat a man, returns with several others, and with them, joined in a ring, attacks the man. So, too, the fish is an example which hath escaped from a broken net, and tells others of the peril, whence it happens that on that day no fishes of that kind are to be seen; on which see Petrus Gregorius, *lib.* 15, *de Rep. c.* 5.

(*To be concluded.*)

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Operative Treatment of Intrathoracic Effusion. By NORMAN PORRITT, L.R.C.P. Lond. ; M.R.C.S. Eng., &c. ; Senior House-Surgeon, Infirmary, Huddersfield, &c., &c. London: J. & A. Churchill. 1884. Pp. 307.

THIS is the essay to which the Fothergillian Gold Medal of the Medical Society of London was deservedly awarded last year. We have much pleasure in directing our readers' attention to it as a meritorious work on a subject of much interest, and one that reflects credit on its author, who has had extended opportunities for observation which he has evidently not neglected. Naturally the major portion of the essay is devoted to the consideration of serous and of purulent effusion into the pleural cavity. Two of the ten chapters into which the work is divided, however, treat of such other intrathoracic effusions as pneumothorax, hæmothorax, pericardial and mediastinal effusion, hydatids, and those rare cases of effusion of gastric and intestinal contents into the thorax.

The author would very properly restrict the term *paracentesis thoracis* to the operation of tapping, or aspiration of the chest, while *thoracentesis* should be applied to the operation of making an opening into the chest which remains patent after the operation is completed. As regards the mode of performing the first of these, Mr. Porritt advises that the "point of election" should be the seventh or eighth interspace about the junction of the anterior two-thirds with the posterior third of the chest wall. As a guide to finding the eighth interspace, he marks on the skin the position of the angle of the scapula when the arm is by the side, and also when the arm is raised above the head. "One inch below the middle of the line drawn between these two points will be found the desired spot." The mode of operating recommended is the most simple and, as we believe, efficient one of puncture by means of a trochar and cannula with a syphon-tube attached.

Our personal experience is quite in accord with the author's that this method is safer, less complicated, gentler, and much less fatiguing than aspiration. Mr. Porritt would limit the actual quantity of fluid removed to two pints, and in no case would he remove more than three pints. He discusses fully the accidents of paracentesis, and states that the removal of a limited quantity of the liquid is the best safeguard against these accidents. He also makes an ingenious suggestion as to a possible method of absorption which the removal of a small quantity only of a pleuritic accumulation may induce.

The author's remarks on the treatment of empyema are particularly sound, and embody the teachings and experience of the best authorities. While hasty operative measures, especially in very young subjects, are to be deprecated, it is futile to attempt to cure purulent effusions by aspiration or tapping; and once the diagnosis of a purulent collection in the pleura has been settled, no time should be lost in evacuating it.

Anatomy of the Inguinal and Femoral Regions considered in relation to Hernia. By EDWARD L'E. LEDWICH. Dublin: Fannin & Co. 1884. 8vo. Pp. 92.

IN a neatly printed little volume we are here presented with the leading anatomical facts relating to the structures which are directly concerned in the more frequent varieties of hernia. The matter is nicely arranged, and for this reason may be found acceptable to the anatomical student who cares to interest himself so far in the subject of hernia as to possess himself of a separate book devoted to its elucidation. The author advances no definite opinions of his own, and, accordingly, as an original production we find nothing calling for definite criticism. As a literary performance the style is certainly not below the average productions which appear in this department of British science, and can be recommended as a fair exposition of our knowledge of the structures and relations of the parts concerned.

The author, with a diffidence perhaps pardonable in a junior anatomist, withholds any pronounced views of his own, and this is a defect from which we hope he will improve himself as he proceeds further in anatomical investigation. He has evidently "made up" with considerable care the literature of the subject, and distinguishes himself neither by the unabashed ignorance nor the uncultured

self-assertion which (one or both) are sometimes found to characterise the self-styled "pure anatomist" of the present day. We shall be glad to see more work from the hands of those engaged in the teaching of anatomy in our Dublin schools, where so much *has been* done to bring our knowledge of human morphology up to its present state of exactness.

Where to take a Holiday: Reports on some of the Home and Foreign Health Resorts. Being the Holiday Number of the *London Medical Record*. London: Smith, Elder, & Co. 1884. Pp. 64.

MOST opportunely at the present season there appears the present *brochure*, and a better shilling's worth to the holiday-seeker or to those in quest of health could not be imagined. Inspector-General Macpherson opens with a most valuable paper on that much-neglected subject, the Spas of Great Britain; and is followed by Dr. Hermann Weber, on the Continental Climatic Resorts in summer. Dr. Symes Thompson contributes a capital memoir upon English Health Resorts; and Dr. J. Burney Yeo upon their Pyrenean congeners. Dr. Parsons' observations upon Sea-Bathing are very good; and Dr. George Thin, in his "Summer Holidays at Sea," gives the reader an appetite for the stupendous bills of fare copied from the Peninsular and Oriental steamers. There are now a number, too many to particularise, of notices of various health resorts in England and France, giving in a few well-chosen sentences all that is essential to know about each; and we trust that in a future number Ireland will receive similar attention. There is a most interesting chapter of hints to travellers—as to what to eat, drink, and avoid; and the number concludes with some notices of useful preparations—*i.e.*, for travellers—of a rather advertising type. On the whole, the number is most valuable.

The International Encyclopædia of Surgery. Edited by JOHN ASHHURST, Jun., M.D.; Professor of Clinical Surgery in the University of Pennsylvania. In Six Volumes. Vol. IV. London: Macmillan & Co. 1884.

ANOTHER volume, the fourth, of this comprehensive and able work, has been issued. The publication is less rapid than was intended, but with a number of contributors it is difficult to keep time. The volume is, however, worth the waiting for. It deals

with injuries of the bones, diseases of joints, excisions, tumours, injuries of the back, and malformations and diseases of the spine.

Dr. Packard's chapters on injuries of bones, including fractures, extend to the bulk of a large volume in themselves, and deal with the most recent views upon this branch of surgery. It is a singularly clear and valuable contribution.

Professor Ashhurst, the editor, writes upon excisions and resections, and there is a special chapter on excision of the knee-joint by Professor Fenwick, of Montreal. In these papers all the ground is covered, and the operations and the after-treatment are fully described. The other articles are also exhaustive, the authors being Mr. Barwell, Mr. Butlin, the late Dr. Liddell, Dr. Packard, and Mr. Frederick Treves. The illustrations are very numerous. We have to repeat our recommendation of this work, which, when finished, will prove one of the most reliable in the language.

A Treatise on the Theory and Practice of Medicine. By JOHN SYER BRISTOWE, M.D. Lond.; LL.D. Edin.; F.R.S.; Fellow and formerly Censor of the Royal College of Physicians; Senior Physician to and Lecturer on Medicine at St. Thomas's Hospital; Examiner in Medicine to the Royal College of Surgeons; formerly President of the Society of Medical Officers of Health; Examiner in Medicine to the University of London; and Lecturer on General Pathology and on Physiology at St. Thomas's Hospital. Fifth Edition. London: Smith, Elder, & Co. 1884. Pp. 1240.

THE day for such works as Watson's Lectures on Medicine, or Bedford's on Obstetrics—works which it was a real pleasure to read, irrespective of their value as text-books—is gone by, and in these modern times we are fain to be content with a kind of literary *Erbswurst* instead of the rich though diluted soups which amply nourished, while they gratified, the students of an earlier age. Of text-books of this later type Dr. Bristowe's is, in our opinion, the best in its own subject, and we welcome with pleasure its fifth edition. It has not escaped the constitutional taint of works of this kind—a tendency to hypertrophy in successive editions—but medicine *does* advance, new subjects and new views and new discoveries press forward for admission; and there is a human weakness in authors which makes them tender about removing old growths, however superfluous, from the tissues of a favourite

offspring. In this case the increase in bulk amounts to no more than five per cent., and for this we get "descriptions of Sarcoma and Carcinoma of the Skin, of Cutaneous Atrophy, and of so-called 'Acute Rickets.'" Other improvements have been made, and we recommend Bristowe's "Theory and Practice of Medicine" to students, and to practitioners as well.

Diseases of the Heart and Thoracic Aorta. By BYROM BRAMWELL, M.D., F.R.C.P.E. Edinburgh: Young J. Pentland. 1884. Pp. 783.

THIS handsome volume is the production of an author already favourably known by his book on the "Diseases of the Spinal Cord" and his "Notebook for *Post Mortem* Examinations." The work is illustrated with 317 lithographs and woodcuts, several of which are copied from photographs of rare and beautiful specimens contained in the Anatomical Museum of the University of Edinburgh.

An appendix is devoted to the subject of the examination of the heart by means of the cardiograph, in which the different forms of cardiography and the way of using them is described.

The Influence of Heredity and Contagion on the Propagation of Tuberculosis and the Prevention of Injurious Effects from Consumption of the Flesh and Milk of Tuberculous Animals. By HERR A. LYDTIN, Carlsruhe, Veterinary Adviser to the Baden Government; G. FLEMING, LL.D., F.R.C.V.S., Principal Veterinary Surgeon to the British Army; and M. VAN HERTSEN, Veterinary Surgeon and Chief Inspector of the Brussels Abattoir. London: Baillière, Tindall, & Cox. 1884. Pp. 175. N.D.

THIS is a translation by Mr. G. Fleming of a report prepared for discussion at the International Veterinary Congress held at Brussels in September, 1883. Its appearance in an English dress is fully justified by the great importance of the subject from a sanitary and pecuniary point of view. In reference to human tuberculosis the investigations of these three eminent veterinarians have many points of great interest. They consider it as evidently proved that a nosogenic agent—a pathogenic microbe having the same morphological and biological characters—exists in the tubercle of man

and in that of animals. This organism, the tubercle-bacillus (Koch), whether it be developed in man or in animals, may induce tuberculosis when, cultivated in a pure state, it is conveyed to the animal possessing the necessary receptivity.

The provisions suggested to prevent the sale of the milk or flesh of tuberculous cattle are most stringent, and would be effective, if possible to be carried out, in checking the spread of the disease.

Seize Années de Pratique Médicale à Contrexéville. Par le DOCTEUR DEBOUT D'ESTREES. Première Partie. Paris: Felix Alcan. 1884. Medium 8vo. Pp. 44.

THIS little pamphlet gives an interesting account of the action of this mineral water in cases of vesical irritation, of diabetes, and of stone in the bladder. The water is an alkaline one, and, as it has the valuable property—unlike many others—of bearing transport to distant places without losing its effects, it is coming to the front more and more. There is no doubt of its power in irritation of the bladder; but prescribers should be careful to order the “Source de Pavillon,” which is the best of the springs of this locality. It certainly causes temporary improvement in diabetes, but in calcular disease it must act mostly by keeping down irritation. Its powers in gout and in gouty disease are undoubted. Contrexéville is situated towards the Vosges district, about nine hours from Paris by the Grande Vitesse.

A Lecture on the Essential Requisites of a Seaside Health Resort, with a Sketch of the Physical Geography and Climate of the Isle of Man. By ALFRED HAVILAND, M.R.C.S.E. 1884. Medium 8vo. Pp. 72.

THIS lecture was delivered in the Masonic Hall, Douglas, for the benefit of the Manx Hospital, and is sufficiently interesting. After a brief historical introduction the author launches into 58 pages about sanitation and sanitary law in general, including compulsory notification and other apples of discord. The remaining 13 pages treat of the Isle of Man—an admirable sanatorium, which, from its equable, mild climate, its great accessibility, and its primitive character, is being every year resorted to more and more.

Sleep-walking and Hypnotism. By HACK TUBE, M.D., LL.D.
London: J. & A. Churchill. 1884. Pp. 119.

THIS book is an expanded form of a paper on "Sleep-walking" read at a meeting of the Metropolitan Branch of the British Medical Association. The phenomena of artificial somnambulism or hypnotism are considered side by side with those of spontaneous somnambulism—the parallelism between them is in many particulars remarkable. The book will suggest to any who have opportunities of observing sleep-walkers many points on which it is desirable to obtain definite information, such as the state of the several senses, capability of reaction to various stimuli, the condition of the reflexes, and other details.

The different aspects of Family Phthisis in relation especially to Heredity and Life Assurance. By REGINALD E. THOMPSON, M.D. London: Smith, Elder, & Co. 1884. Pp. 238.

A GREAT deal of time and of trouble has been spent in this work in proving from the records of the Hospital for Consumption, Brompton, that "phthisis is an hereditary disease capable of being transmitted from ancestor to descendant, and from parent to child." There is nothing new in Chap. XIV., "Family Phthisis in relation to Life Assurance." We think that prudent companies will continue to decline having any relations with such a class of lives. The chapters on the influence of the father and mother respectively, of double heredity, and of atavism, are full of minute details which must have required much patient labour in their collection.

THE TREATMENT OF STRICTURES OF THE ŒSOPHAGUS.

PROFESSOR J. HJORT, of Christiania, read a paper on this subject at the International Medical Congress at Copenhagen, in which he concluded that—1. In cases of cicatricial stricture of the Œsophagus—even in its upper part—impermeable to instruments, gastrostomy *en deux temps* is indicated; and then to treat the stricture, through the fistula, by means of electrolysis, as has been successfully done in one case. 2. It is also probable that the treatment by electrolysis should replace internal Œsophagotomy in cases of cicatricial stricture, still possible for a small sound.—*Medical News.*

PART III.

HALF-YEARLY REPORTS.

REPORT ON TOXICOLOGY.*

By F. J. B. QUINLAN, M.D., Dubl.; Fellow and Additional Examiner in Forensic Medicine, King and Queen's College of Physicians; Physician to St. Vincent's Hospital.

CARBOLIC acid appears at present to be the favourite disinfectant; and, being used for this purpose in enormous quantities, cases of poisoning by it are becoming common. Mr. Hind (*Lancet*, April 18th, 1884, p. 659) relates the case of a girl, aged seventeen, who swallowed, in mistake for an aperient draught, six ounces of coarse carbolic acid of a strength of 14 per cent. He saw her a quarter of an hour after the occurrence, and made her swallow the whites of fourteen eggs, along with nearly a gallon of warm and sweetened milk. Great vomiting ensued, and the patient was relieved. The usual redness and swelling of the fauces occurred, and the urine was deeply tinged with carbolic acid. The patient completely recovered. Dr. Oliver (*Medical Times and Gazette*, March, 1884, p. 282) records another case of accidental poisoning in a child of two years old, who swallowed out of a cup half an ounce of "M'Dougall's Patent Sewage Carbolic Acid." Within ten minutes of taking the poison the child was quite comatose, the pupils were contracted and insensible to light, the muscles were relaxed, and the temperature had fallen to 94·8° F. Three ounces of olive oil were poured down the throat, and a zinc sulphate emetic given; ten minims of sulphuric ether were injected hypodermically, and immediately after two drachms of brandy. For two hours the child remained in a very critical state, and was revived with small and repeated doses of brandy and water. Severe inflammation of the fauces and larynx ensued, and the inflammation spread down the bronchial tubes. The recovery was complete.

* The author of this Report, desirous that no contribution to the subject of Toxicology should remain unnoticed, will gladly receive any publications treating upon it. If sent to the Correspondents of this Journal they will be forwarded.

Carbolic acid, used as an antiseptic, is sometimes attended with serious results, and Dr. Altara (*Italo-Lombard. Medical Gazette*, 5th April, 1884) describes an admirable method of treating such occurrences. In a case of puerperal fever, following delivery at the seventh month, vaginal injections of a one per cent. solution of carbolic acid were employed three times a day along with carbolate of quinine internally. On the second day Dr. Altara was summoned in haste, and found the patient in a state of collapse. The pulse could hardly be felt, the temperature was down to 95° F., there was cold perspiration, vertigo, difficulty of swallowing, and great renal and urinary irritation. Castor-oil and glycerine were administered, but without effect, as the poison was in the system. In three hours the patient was worse, and the idea occurred to Dr. Altara that, as camphor was beneficial in the urinary irritation of cantharides, it might be useful in this case also. Accordingly, he mixed about seven grains of camphor in six ounces of syrup of orange-peel, and administered a tablespoonful every hour. The effect was immediate and decisive. Half an hour after the first dose the toxic symptoms were diminished, and after the fourth the patient was much better, and slept for six hours. In the morning the pulse and temperature were nearly normal. Camphor thus administered appears to be a true antidote. Bufalini and Sinler recommend a little camphor to be added to carbolic acid dressing lotions. They say that this lotion is superior to solution of carbolic acid only, and that it can be used to any extent without danger of absorption poisoning. It is not caustic.

Weak solutions of mercuric chloride are frequently employed for antiseptic purposes, but are not without risk. Dr. Stadfelt, of Copenhagen (*Centralbl. für Gynäk.*), relates the case of an unmarried primipara, who had always enjoyed good health, and who had a good delivery, with the exception of considerable hæmorrhage, the result of an adherent placenta. For the first six days carbolic acid solution was employed for irrigation of the vagina, but on the seventh, a solution (1 in 1500) of corrosive sublimate. Sudden pain in the head, along with a feeling of suffocation, caused the irrigation to be abruptly stopped, and the fluid was allowed to return. Death occurred five days after, the principal symptoms being pain in the head and abdomen, along with diarrhœa. The tongue was inflamed, and a little ulcerated, but there was no salivation. There was considerable albuminuria. A *post mortem* examination showed much renal disease and some intestinal ulcera-

tion. Dr. Stadfelt attributes the death to sublimate poisoning, but it appears more likely to have been due to exhaustion.

Dr. Dujardin-Beaumetz relates a curious case of aconitin poisoning occurring to a physician. This gentleman had prescribed aconitin nitrate in doses of $\cdot 04$ of a gramme, and four of these doses were taken with rather serious results, the last causing oppression of the breathing, internal burning, and icy surface-coldness. Most practitioners would have held their hand here; but this bold experimenter, to prove the harmlessness of his remedy, took a dose of the solution which was variously estimated at from $\cdot 08$ to $\cdot 12$ gramme of the salt. The poisonous effects commenced in a quarter of an hour. There was small, irregular pulse, with contracted pupils, burning of the mouth, a sense of constriction of the throat and abdomen, precordial distress, and weakness of the legs. Sometimes the pupils would suddenly dilate, and blindness would ensue, but sight returned on their contraction. There was deafness. Hypodermic ether and electricity at first did good, but soon lost their effects, and the patient died in six hours from failure of the respiration and of the heart.

Citrate of Caffein has become a rather favourite medicine, and Dr. Routh relates a case where dangerous effects were produced. The *effervescent* citrate was ordered in drachm doses three times a day, but by a mistake of the chemist the pure citrate was supplied. Vomiting, purging, giddiness, tremors, and partial paralysis were the result, but yielded to ammonia, alcohol, and nitro-glycerine. In nine hours the patient had quite rallied.

The antagonism between strychnia and chloral hydrate has been made use of for medical purposes. The *Journal de Médecine de Paris* relates the case of a man who had administered to himself a dose of chloral to produce sleep. In the morning he could not be wakened, his body was cold, his heart weak and irregular, and his pupils insensible to light. As he could not swallow, a hypodermic injection, containing $1\frac{1}{2}$ mgr. of strychnia, was administered; and after an interval of half an hour 2 mgr. more. The action of the heart improved after each dose; in four hours 2 mgr. more were employed, and in thirty minutes consciousness returned.

Conversely, in cases of strychnia poisoning, Faucon recommends chloral as an antidote. Another antidote has been already noticed in this Journal (April, 1883), and is produced by distilling cinchonin with caustic potash. It is called lutidin; and it is stated that frogs treated with it until reflex action disappears are

not affected by strychnia, and that strychnia tetanus is cured by it. This remedy does not as yet appear to have passed out of the region of the laboratory; but cases of strychnia poisoning are generally so appalling in their progress as to leave but little room for treatment.

Belladonna has been found useful in poisoning by chloral hydrate; and Mr. Booth (*Lancet*, March, 1884, p. 468) relates the case of a man who had been drinking heavily, and was threatened with *delirium tremens*. To produce sleep, Mr. Booth prescribed a mixture containing two drachms of chloral hydrate with one of potassium bromide. One-fourth part of this was to be taken at intervals, but the patient got at the bottle and took it all. Soon after he was found cold and livid, with weak pulse and very weak respiration. Nearly a teaspoonful of tincture of belladonna was administered, with marked effect upon the respiratory and cardiac centres. The patient made a good recovery. Belladonna is very useful in the large class of poisoning cases where death takes place from failure of the respiratory and circulatory centres, and where it is desirable to gain time for the elimination of the poison.

Cases of poisoning by the inhalation of ordinary illuminating gas are not uncommon. Not even the most primitive of our country cousins now "blow out" a gaslight; but these poisoning cases mostly occur from a bedroom light going out when the gas is turned off at the meter. Somebody enters the room and goes to bed, and, when the gas is turned on again in the winter morning, it pours in upon the unconscious sleeper. Dr. Clark (*N. Y. Medical Journal*) relates the case of a woman, aged forty, who was found comatose in a room thus filled with gas, to which she had been exposed for fifteen hours. She was unconscious, cyanotic, with cold extremities, rigid muscles, and trismus. The pulse was hardly perceptible, there was œdema of the lungs, and the urine was passed involuntarily. The temperature was 36° C. and the respirations 40. The remedies employed were inhalation of oxygen gas,* tincture of digitalis and whisky hypodermically, dry cupping, also hot-water jars to warm the body. The patient recovered.

The newspapers of to-day (September 20th) record the narrow escape from coal-gas poisoning of a mother and five children. This

* Dr. Vidal Solares, of Barcelona, in the January number for the present year of the *Revista de Ciencias Médicas*, gives an admirable account of the mode of therapeutically exhibiting oxygen gas, both internally and externally, and of its physiological effects.—*Contribucion al estudio del oxígeno bajo el punto de vista terapéutico*.

occurrence took place yesterday in Dalkey, near Dublin, and was caused by the escape of gas from a pipe under repair. About midnight a passer-by, hearing moaning as of persons in great pain, reported the matter to the police, who arrived just in time to avert a fatal result. It is a curious circumstance that the owner of the house was a plumber and gasfitter—thus giving a fresh illustration of an old proverb.

Every physician is aware of the great difference in the periods of recovery between cases of poisoning by carbonic acid and those by carbonic oxide. If the former be got alive into the open air the carbonic acid is usually rapidly thrown off; but, in the latter, the chemical union between the hæmoglobulin and the oxide renders recovery tedious. Dr. Halsted, in the *New York Medical Journal*, proposes to treat these cases by refusion of the blood. His method is to draw from the patient's vein a quantity of the vitiated blood, to defibrinate and oxidise it, and to then restore it to the circulation. Something approaching to this has been done by Werner, in the case of a woman, aged thirty, who had swallowed an ounce of nitrobenzole. The stomach-pump was employed, and powerful remedies exhibited, but in thirteen hours deep coma had set in, the heart was failing, and the patient manifestly dying. Under these desperate circumstances, 17 ounces of very black blood, smelling distinctly of bitter almonds, were withdrawn from the arm, and were replaced by the transfusing of 12 ounces of warm, healthy, defibrinated human blood. Improvement ensued, followed by relapse; but the patient rallied, and fifteen hours after the transfusion was out of danger. The smell of bitter almonds remained in the breath for five days.

Dr. Stratton Carpenter relates (*New York Medical Record*) a very remarkable case of tartar emetic poisoning, in which the almost unprecedented dose of 170 grains of the drug was taken without a fatal result. The patient, aged twenty-one, a dispensary assistant in his hospital, was subject to constipation, which he was in the habit of relieving by a dose of cream of tartar. Through inadvertence he took down from the shelf the bottle of tartar-emetic, mistaking it for its harmless congener; and, dissolving several teaspoonfuls in a tumbler of water, drank the solution. No result occurred for quarter of an hour, when he was seized with most violent and persistent vomiting, accompanied by severe burning and pain in the œsophageal and epigastric regions. The contents of the stomach first came up, and were followed by bile

mucus and blood; and, along with this, there was coldness of the extremities and dangerous vital prostration. The temperature was 35° C., the urine was scanty and dark-coloured, and respiration and sensation were unaffected—these three latter points being contrary to what is laid down in most text-books. The treatment consisted in copious draughts of tannic acid solution, of albuminous drinks, and of laudanum, to relieve the burning pain. Next morning the patient was a good deal relieved, but there was a great deal of dysenteric irritation. The recovery was complete; and it is interesting to note that for a quarter of an hour this immense dose of poison had no action whatever. Majendie, by a famous but cruel experiment, proved that tartarated antimony does not act till it has been absorbed, and that its emetic effects are due to the specific action of the drug upon the nervous system, and not to any local irritant action upon the intestinal passages. This case completely confirms that view.

Mr. D. B. Balding (*British Medical Journal*, April, 1884, p. 818) records a case of poisoning by eating twigs of the yew tree. The patient was a servant maid, who was found dead in her bed, the fatal result having apparently occurred about nine hours after taking the poison. The girl was *enceinte*, and the act was apparently suicidal.

There have not been any sensational poisoning cases in our courts during the year; but allusion may be made to the unfortunate mischance which occurred in the hands of Dr. Alcock, Medical Officer to Kilnaleck Dispensary, Co. Cavan. Dr. Alcock, who is considerably over eighty years of age, has several times applied to retire on pension; but this the guardians refused, and he had to struggle on. He was sent for at 8 p.m., a distance of three miles, to see a boy who was suffering from colic, and found him in a dark loft; and there by mistake administered a teaspoonful of hypodermic solution of morphia in place of an aperient draught. Finding his error, he remained with the boy, and did all in his power, leaving him apparently none the worse. Next morning he was sent for, but found the boy dead. There was, however, no symptom of morphia poisoning, and the death was apparently due to exhaustion. The matter was simply a most unfortunate misadventure, and the magistrates most properly refused to receive the informations for manslaughter which were tendered. The persons really to blame were the guardians, who, taking advantage of the permissive clause in their Pension Act, compelled a man to continue in a situa-

tion for which he was manifestly unfit by reason of his advanced age.

A sensational poisoning case will shortly be tried in the Dutch courts. It is that of the woman Van der Linden, who is believed to have poisoned at least twenty-four of her relatives, and is suspected to have poisoned many more. In these countries the law most properly prohibits any one person insuring the life of another for his own benefit; and the only exception permitted is when the insurer has an actual *bonâ fide* interest in the life of the insured, in which case he is permitted to protect himself by insuring to the extent of that interest, and no more. In some Continental countries, however, it is different, and any person can insure the life of another with or even without their knowledge. The allegation against the Vrow Van der Linden, who is a woman belonging to the working classes, is that she made a systematic trade of insuring her relatives and friends' lives in benefit societies, of then poisoning them, and, finally, drawing the insurance money. In the rather sleepy town of Leyden, where she lived, she was a regular village gossip, always manœuvring into her neighbours' houses, and advising them about their affairs. She used to watch her opportunity, and, when the family *pot au feu* was simmering, used to drop into it some of her deadly powder, which consisted of the combination of arsenic and sulphur known as orpiment. Her trade flourished; but at last, in the house of her brother-in-law, Mr. Franckhuisen, she put in too large a dose, the result of which was that he, with his wife and child, took violently ill at their dinner, and died in great agony. The *post mortem* made everything clear, and the bodies of the numerous victims are being exhumed and examined. The trial will come off very soon, and with the usual Continental amplitude of detail; and it is thought, according to the local newspaper, that "never will a trial place in the light of day crimes more abominable or perpetrated on so large a scale." A detailed account will be given in this Journal of the proceedings, and particularly of the medical and scientific evidence. Public opinion runs very high, "atrocious criminal" being one of the mildest terms employed by the Dutch journals; for on the Continent, different from among ourselves, newspapers comment upon trials still *sub judice* in the most unreserved manner, and think nothing of designating the accused as the "murderer," the "guilty one," &c.—conduct which in these countries would be promptly and most properly dealt with as a gross contempt of the tribunal conducting the trial.

The fourth edition of Dr. William Murrell's "What to do in Cases of Poisoning" has just been issued. In this handy and succinct pocket volume every information is given as to the diagnosis and treatment of cases of poisoning, and that in a form most handy for reference. With it and with the "antidote bag" no practitioner need be for a moment at a loss what to do in such cases.

CORTICAL LESIONS OF THE BRAIN.

DR. M. ALLEN STARR, of New York, in the July number of *The American Journal of the Medical Sciences*, has collected the American cases of lesions of the central region of the brain, and carefully studied their localised symptoms. He finds that disturbance of general sensation—including the senses of touch, pressure, pain, and temperature, together with the sense of the location of a limb—may occur either in the form of subjective perceptions of such sensations without objective cause, or in the form of impairment of these sensations. In either case it indicates a disease in the central convolutions, and possibly in the adjacent portion of the parietal lobules. The power of voluntary motion of the muscles of the opposite side of the body is located in the two central convolutions which border the fissure of Rolando. Motions of the face and tongue originate in the lower third of this region; motions of the arm, in the middle third; motions of the leg, in the upper third. Spasms in, or paralysis of, a single group of muscles may indicate disease of its motor area. Extensive spasms or paralysis may indicate a large area of disease in this region, but if more marked in a single group of muscles than in others it may indicate a small focus of disease in the motor area of that group affecting other motor areas indirectly and coincidently. Paralysis following spasm in one group of muscles is a characteristic symptom of disease in the central region. Disturbance of the power of speech indicates disease in the convolutions about the fissure of Sylvius on the left side in right-handed persons, and on the right side in left-handed persons. If the patient can understand a question and can recall the words needed for a reply, but is unable to initiate the necessary motions involved in speaking, the disease is probably in the third frontal convolution and in the adjacent portion of the anterior central convolution. If the patient cannot recognise spoken language, but can repeat words after another, or can use exclamations on being irritated, the disease is probably in the first temporal convolution. If the patient can understand and can talk, but replaces a word desired by one that is unexpected, the disease is probably situated deep within the Sylvian fissure, or in the white substance of the brain, and involves the association fibres which join the convolutions just named.

PART IV.
MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ACADEMY OF MEDICINE IN IRELAND.

President—J. T. BANKS, M.D.
General Secretary—W. THOMSON, M.D.

SUB-SECTION OF ANATOMY AND PHYSIOLOGY.

President—PROFESSOR J. M. PURSER, M.D.
Sub-Sectional Secretary—JOHN FREEMAN KNOTT, F.R.C.S.I.

Thursday, May 1, 1884.

The PRESIDENT in the Chair.

The Darwinian Theory—the Development of the Eye.

MR. KNOTT read a paper for Dr. J. M'Donnell on the development of the eye in vertebrata, and its bearing on the Darwinian theory.

In the absence of the author, the paper was not discussed.

Musculus Sternalis.

MR. KNOTT read a note on a specimen of the musculus sternalis. He said he had, some weeks before, met with a bilateral specimen of the musculus sternalis of perfectly symmetrical arrangement. Arising from the cartilages of the third, fourth, and fifth ribs, and edge and front of the sternum, it passed upwards to be blended with the sterno-mastoid of the same side. Twigs of the intercostal nerves were traced into it. The various homologies of this anomalous muscle which had been advocated by different authorities were then noticed; and, while admitting that each might satisfy the observers in certain cases, he feared that anatomists in endeavouring to connect the structure in all cases with the same stratum or group of muscles, had fallen into the same difficulty as the travellers in the desert who came to loggerheads on the subject of the colour of the chameleon. He had no doubt that in the present case it could be more distinctly referred to the sterno-mastoid than to any other muscle. It was sometimes directly continuous with the rectus abdominis,

and in others appeared, as in the series of specimens exhibited by Mr. Abraham, to be a part of the great pectoral, a view so ably advocated during the present session by Professor Cunningham. The idea of its relationship with the panniculus carnosus presented probably the greatest difficulties to its acceptance. Its depth of position, thickness of stratum, presence of strong tendinous extremities, and powerful attachments to bone, were all against this hypothesis, which, the speaker thought, should be entirely abandoned. He believed that the anomalous muscle was of variable origin, and might, in individual instances, be referred to any of the other sources given, or even be a muscle *sui generis*; but the hypothesis of a community of origin for all the aberrant specimens described and figured by various observers under the name of musculus sternalis could not bear close investigation.

PROF. CUNNINGHAM remarked that since he had first recorded the source from which the musculus sternalis receives its nerve of supply, he had been so fortunate as to meet with three additional cases. In all these the same nerve was found, although in two instances its continuity from origin to termination had not been fully made out. One of these cases he had mounted as a permanent specimen. He had traced the terminal twigs of the intercostal nerves into the musculus sternalis, but had always managed to follow them through it as they passed to the surface. In no case had he observed them giving filaments to the muscle. They pierced it in the same way as they pierced the pectoralis major. The argument which Dr. Knott adduced against the musculus sternalis belonging to the same group as the platysma could not be entertained for a single moment. It was true that the platysma shows little or no bony attachment; but attention must not be confined to man, in whom this group of muscles is but feebly developed. In quadrupeds portions of the panniculus carnosus show strong attachment to bone, and even in some cases are concerned in producing direct movement of the humerus at the shoulder-joint. Whilst repudiating this argument, however, he agreed with Mr. Knott in considering that the musculus sternalis has no relationship with the platysma myoides. He drew his proof from its nerve of supply.

MR. ABRAHAM said the subject was a very interesting one to him, having raised discussions on it last year, and promulgated his views from the examination of several specimens. The evidence of Mr. Knott was negative rather than positive as regarded the nerve supply; and Mr. Knott had not stated whether the specimen was dissected by himself or was simply shown to him after partial dissection and destruction by students. He corroborated what Prof. Cunningham had said about his last muscle. The thoracic nerve was quite distinct.

MR. W. THORNLEY STOKER hoped some of the student-associates would object to the term "destruction by students."

MR. KNOTT, in reply, observed that what Prof. Cunningham was pleased to call "his proof," proved absolutely nothing, as the nerve supply from a common origin in some cases merely increased the probability that it belonged, in those instances, to the pectoral group, which had been fully admitted. With regard to the bony attachments of the panniculus carnosus, they could not for a moment be compared in strength and firmness of union with those of the deeper muscles. In reply to Mr. Abraham's remarks, he admitted that part of his evidence was negative, but he saw no reason to doubt that the muscle was wholly supplied in his specimen by the intercostal nerves—they were found entering the muscle and branching in it. Nothing more could be made out without microscopic examination.

Note on Chinese Skulls.

MR. ABRAHAM exhibited six Chinese skulls, concerning which he read a communication.

PROF. CUNNINGHAM said he had measured the six specimens in Trinity College. Three were casts, but still, of course, they served equally well for making out the cephalic index. All, with one exception, were in the meso-cephalic group. One, however, was marked by brachio-cephalic, well within that group, which was a curious point.

MR. ABRAHAM remarked that skulls of one race differed among themselves in every point, and valid results could only be obtained by taking a large series for comparison.

The Sub-section adjourned.

UNILATERAL SWELLING OF HYSTERICAL HEMIPLEGIA.

DR. S. WEIR MITCHELL records, in the July number of *The American Journal of the Medical Sciences*, three cases of hysteria, in which there was unilateral increase in bulk, at or near the menstrual period, and also at other seasons, after emotional excitement, and he has been unable to find elsewhere any narration of similar cases. Whatever conclusions we may reach as to the immediate cause of the unilateral differences in size, which Dr. Mitchell has here described, it is at least clear that they are under the influence of the nervous system, and vary with the causes which also increase or lessen the analgesia, or give rise to chronic spasm. Beyond this Dr. Mitchell can as yet hardly go. Most probably, he thinks, it will be found that in many unilateral hysteric palsies a like phenomenon exists, and has merely escaped attention because of being the least prominent in a group of symptoms. At all events, it adds another to the large group of resemblances which so closely relate organic to hysteric hemipalsy.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F.R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, September 6, 1884.

Towns	Population in 1884	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	351,014	791	765	213	132	-	-	35	2	13	11	126	91	28·3	6·9
Belfast, -	216,622	544	345	98	46	-	-	11	1	2	4	62	54	20·7	4·8
Cork, -	80,124	163	136	25	36	-	1	2	-	3	2	11	17	22·1	3·1
Limerick,-	38,562	87	55	14	14	-	-	-	-	1	-	2	7	18·6	1·0
Derry, -	29,162	70	53	11	9	-	-	9	-	2	-	4	2	23·6	6·7
Waterford,	22,457	45	37	5	11	-	-	-	-	-	2	1	2	21·4	1·7
Galway, -	15,471	25	28	3	8	-	-	-	-	-	2	-	6	23·5	1·7
Newry, -	14,808	39	16	2	3	-	-	-	-	1	-	1	3	14·0	1·8

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 28·3 per 1,000 of the population annually in Dublin, 23·6 in Derry, 23·5 in Galway, 22·1 in Cork; the lowest rates are 14·0 in Newry, 18·6 in Limerick, 20·7 in Belfast, and 21·4 in Waterford. The rate of mortality from seven chief zymotics ranged from 6·9 per 1,000 per annum in Dublin, 6·7 in Derry, 4·8 in Belfast, 3·1 in Cork, 1·8 in Newry, and 1·7 in Waterford and Galway, to 1·0 in Limerick. Except in this last-named town and Waterford there is again a perceptible increase in the general mortality and particularly in that due to zymotic diseases.

The recorded deaths represent a rate per 1,000 of the population annually of 24·8 in twenty-eight large English towns (including London, in which the rate was 20·4), 23·5 in the sixteen chief towns of Ireland, 25·3 in Glasgow, and 15·5 in Edinburgh. There is a slight increase in the mortality in the English towns generally; but in London it has fallen considerably—from 24·0 to 20·4 per 1,000 per annum. It has

also fallen somewhat in Glasgow, and continues very low in Edinburgh. In the Irish towns the rate of mortality has risen decidedly—from 20·8 in the previous four weeks to 23·5. If the deaths (numbering 17) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 27·7, while that of the portion of the district included within the municipal boundary is 29·9. In London the epidemic of smallpox is rapidly declining—the deaths were only 61 against 97, 185, 155, 85, and 46 in the five preceding periods respectively. The deaths from diarrhoeal diseases in the same city, which numbered 1,519 in the preceding four weeks, fell to 836.

Acute febrile zymotics were returned as the cause of death in no less than 206 instances in the Dublin district, compared with 99, 76, 62, 84, 82, 71, and 72 in the seven preceding periods of four weeks each, and a ten-years' average of 135·9 in the corresponding period. This group of maladies therefore once more showed a decidedly increased prevalence, while they were much more fatal than usual. The 206 deaths included 35 from scarlet fever, only 11 from "fever," 13 from whooping-cough, as many as 126 from diarrhoeal diseases, and 2 from diphtheria. The epidemic of scarlet fever displays a disquieting vitality. Of the 35 fatal cases, 14 occurred in the South City Districts, 4 in the Donnybrook (Pembroke Township) District, and 6 in that of Blackrock. Of the 11 deaths referred to "fever," 9 were ascribed to enteric fever, and only 1 to typhus, while in 1 instance the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were only one-half those registered (22) in the previous period. Twenty-one children under five years succumbed to scarlet fever, including only one infant of less than twelve months. Of the 13 victims of whooping-cough 12 were under five years of age, including 6 infants of less than twelve months old. Among the 126 victims to diarrhoeal diseases were 102 children under five years, and of these 73 had not reached the age of one year.

Measles caused but a single death in the selected Irish towns, namely, in Cork.

Scarlet fever was fatal in 11 instances in Belfast, the deaths being 6, 1, 5, 9, 9, 12, and 14 in the seven previous periods. The deaths from this disease rose from 7 to 9 in Derry. Diarrhoeal diseases were credited with 207 deaths in the eight towns, against 57, 14, 26, 24, 32, 24, and 28 in the seven previous periods of four weeks each. In London the weekly registered deaths from diarrhoeal diseases were 242, 207, 209, and 178 respectively. "Fever" generally declined in prevalence and fatality.

In the Dublin Registration District 791 births and 765 deaths were registered, compared with 725 births and 583 deaths in the previous four weeks. The births were those of 380 boys and 411 girls. The deaths

of infants under one year rose from 123 to 213; those of persons aged sixty years and upwards rose from 125 to 132.

The deaths referred to pulmonary consumption in the eight towns were 182, compared with 197, 243, 216, 244, 243, 212, 220, 189, 170, and 173 in the ten preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 91 deaths, against 64, 92, 108, 172, 155, 126, 157, 161, 185, and 165 in the ten preceding periods, and an average of 74·4 in the corresponding four weeks of the previous ten years. The 91 deaths included 56 from bronchitis (average = 45·9) and 16 from pneumonia (average = 14·1). Of the 56 persons who succumbed to bronchitis, 6 were infants under twelve months, whereas 14 had passed their sixtieth year.

On Saturday, September 6, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox, 1 case of measles, 50 cases of scarlet fever, 20 of typhus, 9 of enteric fever, and 5 of pneumonia.

The mean temperature of the four weeks was 58·9° in Dublin, 56·5° in Belfast, 59·6° at Roche's Point, Co. Cork, 57·2° at Edinburgh, 57·9° at Glasgow, and 62·8° at Greenwich. The maximal readings of the thermometer in the screen were 74·9° in Dublin, 71° at Belfast, 73° at Cork, 78·5° at Edinburgh, 80·0° at Glasgow, and 94·2° at Greenwich. This last most exceptional reading was recorded on Monday, August 11.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of August, 1884.*

Mean Height of Barometer,	-	-	-	29·971 inches.
Maximal Height of Barometer (on 25th, at 9 p.m.),				30·286 „
Minimal Height of Barometer (on 28th, at 9 p.m.),				29·587 „
Mean Dry-bulb Temperature,	-	-	-	60·7°.
Mean Wet-bulb Temperature,	-	-	-	56·8°.
Mean Dew-point Temperature,	-	-	-	53·5°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-			·414 inch.
Mean Humidity,	-	-	-	77·8 per cent.
Highest Temperature in Shade (on 12th and 17th),				74·9°.
Lowest Temperature in Shade (on 29th),	-			44·6°.
Lowest Temperature on Grass (Radiation) (on 26th),				40·4°.
Mean Amount of Cloud,	-	-	-	56·6 per cent.
Rainfall (on 8 days),	-	-	-	·777 inch.
Greatest Daily Rainfall (on 27th),				·339 inch.
General Directions of Wind,	-	-		W.S.W., S., & S.E.

Remarks.

A very fine and summerlike month, with high temperature and scanty rainfall. The prevalent winds were southerly (S.E. to S.W.) and mode-

rate in force. There was an absence of any deep or serious atmospherical depressions; but about the 12th heavy thunderstorms raged over a great part of the United Kingdom. The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 60.7° ; that calculated by Kaemtz's formula from the means of the daily maxima and minima was 60.3° —a value which is 1.4° above the average mean temperature, calculated in the same way, for the twenty years, 1865–84, inclusive. On two days—the 12th and 17th—the thermometer rose to 74.9° in the screen; on the night of the 28th–29th it fell to 44.6° . The rainfall was only .777 inch (scarcely more than three-quarters of an inch), compared with a twenty-years' average fall of 2.877 in August. In no other of the twenty years was there so small a rainfall in this month. The rainy days were but 8 in number, against a twenty-years' average of 15.5. In August, 1870, rain fell on only 7 days, but the amount was 1.514 inches, or nearly double the fall in the present year. In Dublin thunder and lightning occurred on the 11th; lightning was also seen on the 13th, 14th, and 28th. The atmosphere was foggy on the 9th, 11th, 12th, and 18th.

At the very beginning of the month the weather became settled owing to the approach of an anticyclone from S.W. This system gradually spread over the United Kingdom, and finally settled down over Scandinavia. In England, particularly, a steady rise of temperature took place during this period, so that on Friday, the 8th, the thermometer rose to 89° at Loughborough, Cambridge, and London, 88° at Oxford, and 85° at York. In Dublin the maximum for the week was 74.2° on the 8th.

The week ending the 16th was distinguished for great heat over England and frequent thunderstorms in many parts of the kingdom (especially in Scotland, where also fog and haze were very prevalent). On Monday, the 11th, the thermometer rose to between 90° and 94° over the inland parts of England. Next day a destructive thunderstorm passed over Scotland, with local torrential rains. This storm became developed in Ireland on the evening of the 11th, when thunder and lightning occurred in Dublin, the air being thick and foggy at the time.

At the commencement of the third week the weather was again hot and dry in England, but cooler and less settled in Ireland and Scotland. On Tuesday, the 19th, a well-marked depression appeared off the N.W. of Ireland, while subsidiary disturbances passed across England, causing cloudy, showery weather, a fall of temperature, and a brief spell of N.W. breezes. The sky subsequently cleared, and warm days alternated with cool, dewy, and foggy nights.

During the last week a sudden and complete change was experienced from the dry, hot weather previously observed to a period of cloud, rain, and greatly reduced temperature. The change began over Scotland on Sunday, the 24th, at which time a bright, clear sky and great heat held

in England, the thermometer rising to between 85° and 90° at the inland stations. From Scotland the change spread rapidly, so that at 2 p.m. on Monday, the 25th, the thermometer in London stood at 59°—or 27° lower than it had been twenty-four hours previously. From this time to the close of the month the weather remained in a cool, cloudy, changeable state, with frequent showers and some local thunderstorms in Great Britain.

PERISCOPE.

Edited by G. F. DUFFEY, M.D., F.K.Q.C.P.

EXAMINATIONS FOR THE PUBLIC SERVICES.

THE following papers were set at the examination of candidates for her Majesty's Army, Indian, and Naval Medical services, held in August, 1884:—*Anatomy and Physiology* (Sir Joseph Fayrer).—1. Describe the tibia, giving an account of the origin and insertion of the muscles arising from or inserted into it. Describe also the structure of the knee-joint. 2. Describe the abdominal aorta, giving an account of its relation to neighbouring parts. Enumerate its branches and describe in detail the relation and distribution of those of the coeliac axis. 3. What are the sources of animal heat, and the nature of the mechanism by which it is regulated and distributed? Explain how it is that a mean temperature of the body is preserved under exposure to the influence of either extreme heat or extreme cold. 4. Describe the origin, distribution, anatomical relations and functions of the spinal accessory nerve and its branches. 5. Describe the dissection by which you would expose the parotid gland. Give an account of its connexion and relation to the various neighbouring structures. *Surgery* (Mr. Pollock).—1. What are the causes which give rise to extravasation of urine in the perinæal region? Describe the appearance of the parts in the various stages of extravasation, and the treatment, and the consequences of such an injury. 2. Describe the symptoms by which chronic inflammatory swelling of the testicle may be diagnosed from any other enlargement of that organ, and the treatment to be adopted for the relief of the first mentioned condition. 3. Explain generally what is understood by the term "tertiary syphilis." What tissues does it most frequently affect, and what should be the treatment under its various conditions? 4. What are the constitutional and local causes, and general characteristics, of gangrene affecting any portion of the lower limb in old age, independent of any severe accident, and what should be the treatment, according to the various stages or conditions of the malady? 5. Describe the conditions known as "caries" of bone. What bones are most commonly thus

affected, and what serious complications may follow when it attacks certain bones? What are the best local, and constitutional, measures to be recommended under these various circumstances? 6. Describe the appearance and conditions of a knee-joint when the seat of acute synovitis; the treatment of such a case, and any unfavourable symptoms that may ensue when the acute state has subsided. *Medicine* (Dr. Aitken).—

1. Explain the meaning of vaccination. Describe its purpose as first applied to the human race, and mention how, when, and by whom it came to be so employed. Explain what is meant by primary vaccination, and what by secondary vaccination or revaccination, and describe the regular phenomena which follow each of these operations; also describe the appearance of a perfect vaccine pustule, and of the scar which is typical of a genuine vaccination, and how its characteristic appearance is brought about. Explain, further, the *rationale* of “arm to arm” vaccination, and mention the age at which primary vaccination is to be done, and the means necessary to secure its success. Lastly, explain how “sufficiency in amount” of vaccination is to be judged of, and how the operation is performed. 2. What are the indications afforded by the ophthalmoscope in diseases of the brain, of its membranes, and of the cranial bones? 3. What are the diseases which may be mistaken for enteric fever, in the absence of the rose rash? and discuss the points in each case by which your diagnosis would be arrived at. 4. Describe the causation, morbid anatomy, histology, and treatment of rickets. 5. Describe the causation, phenomena, and morbid anatomy of the various forms of febrile disease usually described as puerperal fever. What are the indications for their treatment, prophylactic and curative; and on what grounds would you base a prognosis? 6. Name the officinal preparations of ergot, and the doses of each. What are the chemical principles obtained from ergot? and in which of them resides the activity of the drug? Describe the physiological action, the remedial uses, and the mode of administration of the crude drug, and of those of its constituents which have been used. *Zoology, Botany, and Physics* (Dr. Allman).—1. What are the classes of the *Vertebrata*? Arrange these classes into two groups in accordance with the presence or absence of an amnion during development. 2. Describe the stomach of a sheep, and enumerate the more important points of structure which are usually associated with this form of stomach in such animals as possess it. 3. In what order of birds are the wings so imperfectly developed as to be incapable of subserving the purpose of flight? Point out the leading features in the geographical distribution of this order. 4. Select any typical example you please of the *Cœlenterata*, and describe its structure. 5. Enumerate the principal points of difference as regards mouth-organs and wings between the following order of insects—*Coleoptera*, *Hymenoptera*, *Lepidoptera*. Give an example of each of these orders. 6. What are the essential, and

what the non-essential, parts of a flower? Adduce one or more instances of flowers in which the non-essential parts are absent. 7. What is the difference between the fibre of cotton and that of flax? From what part of the plants yielding them is each obtained? 8. Define the natural order *Ranunculacea*. Adduce from the pharmacopœia one or more examples of plants referable to this order. 9. What is cyclosis? Give some examples of this phenomenon. 10. What is chlorophyll? Mention the conditions necessary for its development. 11. What is meant by the "law of sines" as applicable to the refraction of light? 12. What is meant by the "dark lines" on the solar spectrum? How may these lines be accounted for? 13. State the evidence from which it has been inferred that various parts of the earth's surface are slowly undergoing changes of level. 14. What is a "river delta?" Mention some of the principal river deltas of the world. 15. Explain the formation of "dew."

ERYTHRASMA.

At a meeting of the Imperial Royal Society of Physicians of Vienna, on the 16th of May, Dr. Riehl, Assistant to Professor Kaposi in the clinic of dermatology, showed a man who suffered from "Erythrasma." This dermatomycosis was described about twenty-five years ago by Burghart and Bärensprung, but subsequently fell into oblivion, until Besnier, of Paris, recalled attention to it. It was left to Balzar, however, to give a full and exact description of it. In many respects erythrasma is similar to pityriasis versicolor, the skin being stained with yellow or brown patches, easily denuded of their epidermis. They vary in form and their size is from that of a lentil to that of the palm of the hand. In contrast with pityriasis versicolor, however, the inflammation is here superficial, presenting itself as an erythema, and the affection is of longer duration. On examining the scales which have been scraped off from the patches, a fungus which bears great resemblance to "*Microsporon furfurans*" is found—namely, "*Microsporon minutissimum*." Erythrasma is usually met with on the scrotum, the inner part of the thighs and in the axilla. In the man who was shown to the Society, the erythrasma stains were to be seen also in the front of the thighs and on the abdomen. Erythrasma is to be distinguished from *Eczema marginatum* by the fact that the process in the latter disease goes far deeper, and from *Herpes tonsurans* by its course. *Herpes tonsurans* has an acute course, and is moreover characterised by exudation into the epidermis. The treatment consists in killing the fungi and lifting off the epidermis; a complete cure is thus obtained in a comparatively short time.—*Med. Times.*

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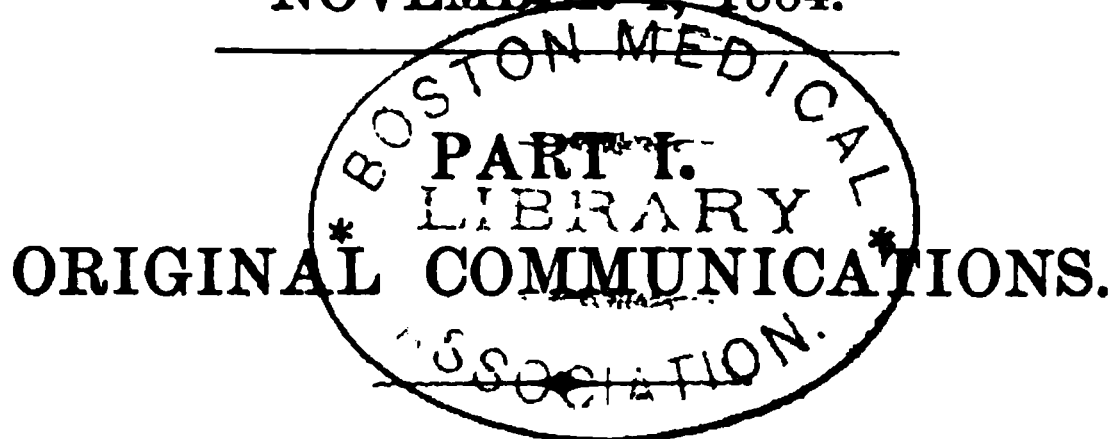
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ART. XVII.—*On the Water-supplies to Irish Towns.** By **CHARLES A. CAMERON, M.D.**; S. S. C. Camb. Univ.; M.K.Q.C.P.; Vice-President and Professor of Hygiene, R.C.S.I.; Vice-President, Institute of Chemistry of Great Britain; Examiner in Sanitary Science, Royal University; Medical Officer of Health for Dublin.

THE results of many years' experience in the examination of potable waters have convinced me that a very large proportion of those used in this country are below the standard of a fairly pure water. No doubt a similar state of things exists in other countries. The extent to which the health of communities is affected by the quality of their water-supplies has not been accurately determined; but there is evidence to prove that, in the case of many districts, the state of public health has been improved by the substitution of pure for impure supplies of water.

There is some difference of opinion as to what constitutes the purest potable water. The majority of chemists appear to consider such water as that which Glasgow obtains from Loch Katrine as the best for all domestic purposes. This water really differs but slightly from rain. One gallon (70,000 grains, or ten pounds in weight) of it evaporated to dryness, leaves only from 2 to 2½ grains weight of solid matter. If the latter be burned, about one half (the organic part) disappears, leaving the mineral, or inorganic part. Loch

* Paper read October 3rd, 1884, at the Congress of the Sanitary Institute of Great Britain, held at Dublin.

Katrine water, therefore, contains only about one part of organic matter and one part of mineral matter in 70,000 parts. This kind of water is usually not very sparkling. Many persons do not like its "flat" flavour so much as that of water taken from springs or wells, and containing from 10 to 100 grains of solid matters per imperial gallon. There is generally less dissolved gas in the soft water of Loch Katrine, and its temperature is in summer higher as compared with spring and well waters.

Some persons believe that very soft waters are not so wholesome as moderately hard ones, owing to the absence of lime compounds from the former. No doubt this earth is an abundant constituent of animals; but there is no good physiological proof of the truth of the assertion that the lime of our bones is procured from the water we drink. By far the greater portion of the lime in the animal system is combined with phosphoric acid, whilst in water it is united with carbonic acid and sulphuric acid (in some waters there is chloride of calcium). It seems strange, therefore, that lime should be obtained from water and phosphoric acid from some other source. I am one of those who prefer soft water to hard water for a town supply; for although in many instances the flavour of hard water is pleasanter, yet for cooking and washing purposes the soft water possesses great advantages over the hard one. Beside, I do not believe that the lime in water contributes to the nutrition of animals.

The Dublin pipe-water is derived from the impounded drainage of a mountainous region. It contains $4\frac{1}{2}$ grains of solid matters—one-half of which consists of organic matter, nearly altogether derived from peat.

The water supplied to Irish towns contains, with very few exceptions, a larger amount of solid matters than is found in the Vartry water. The colour of the latter and of Loch Katrine water is a very faint yellow, whilst most of the high-pressure waters supplied to the Irish towns have a colour varying from a faint yellow to a brownish hue.

In selecting a water for a town supply, due regard should be had to colour—the lighter it is the better. The very brown waters are usually much objected to, even when it is known that the colouring matter is derived from peat, and is therefore comparatively innocuous. When water is impounded in reservoirs it often happens that its colour gradually becomes deeper; this change is due to the vegetable matter of the soil and of the reservoir becoming soluble

and entering into solution. After a time, which may be from one to three years, the water will lose much, perhaps nearly all, its colour—this has happened in the case of the Vartry and Knockaderry (Waterford) waters. The nearer the amount of solid matter approaches that contained in the Vartry water the better—it is undesirable that it should exceed 14 grains per gallon.

It is most important to ascertain carefully the extent of the drainage area proposed to be utilised for a water supply, and also the rainfall of the district where several sources are available; that which yields the clearest water should be selected, so as to avoid the expense of filtration. The greatest attention should be given to the nature of the industries carried out upon the drainage area. If there be no factories or arable farms so much the better. If there be villages or even isolated dwellings, the sewage from which would probably enter a projected reservoir, the means of diverting such objectionable matter should be considered before the commencement of operations. It sometimes happens that the sources of impurities on a catchment area are so numerous and serious that they cannot, economically, be satisfactorily dealt with.

As a rule, I do not like supplies of water taken from large rivers: I prefer the collection and impounding of springs and streams in hilly regions. In the former case the water has usually to be pumped up into "service reservoirs," which is more or less an objectionable process; in the latter case the water can be delivered, by its gravitating power, with any desirable pressure, to the points of consumption. Lakes, especially those of large size, afford in general better water than rivers. A little sewage entering the former has an inappreciable effect upon the composition, whilst upon a river its effect might for a time be very serious.

Springs in the limestone rocks often afford an abundant supply of water; it is usually hard, but this is generally its only bad point. The spring waters may be conveyed by means of small earthen or iron pipes (even gas pipes, as Sir Robert Rawlinson suggests, may answer) direct to small towns. In cases where there is a river ascertained to be free from pollution, its waters might be delivered under pressure, if pumped into tanks by means of turbines. These machines, so much used in America and other countries, are rarely employed in Ireland. It is not desirable to have the service tanks placed in or very close to a town, as its water is liable to become contaminated with soot and other matters.

For many small towns a good supply might often be procured

at a moderate cost. For example, Professor Townsend, C.E., has supplied Belmullet with high-pressure water at a cost of only £1,000, exclusive of the cost of land and legal expenses. The reservoir consists chiefly of concrete, with an iron main. The water flows by gravitation.

In collecting water for the purpose of having it analysed, care should be taken to secure a specimen likely to represent the average quality of the proposed supply. The centre of a river is the best part to take samples from. If the water of a river is proposed to be taken as a supply for a town, then that of every neighbouring stream entering it should be examined. In case the analysis of one or more of the tributary streams proved unfavourable, it might often be possible to either divert the streams or take water from the river at a point above the objectionable tributaries to it.

I have discovered the remarkable fact that good and bad water may co-exist in the one well—good hard water at the lower part, soft and bad water on the surface. Hence it is important that surface drainage, nearly always polluted, should be kept out of the openings of wells by having them covered, and the sides of the shafts cemented at least six feet downwards.

The organic matter in water may be wholly or partly derived from a vegetable source such as peat, the decomposing roots, &c., of plants in the soil, and their decaying leaves, &c., lying upon the surface of the ground. In countries where malarial fevers prevail, the presence of much vegetable matter in potable water is likely to produce disease in those who drink it; but in Ireland there is no evidence to show that organic matter altogether derived from peat, &c., is injurious to health. This question is of great interest in this country where peaty waters are so very common. Those waters have a yellowish or even brown hue, and are more frequently soft than hard.

Vegetable matter contains, on the whole, nearly 2 per cent. of nitrogen; when dissolved or suspended in water, a portion of this nitrogen is converted by fermentation into ammonia, which ultimately becomes oxidised into nitric acid. In the statement of the results of a water analysis, the amounts of albuminoid ammonia and saline ammonia are always mentioned, and sometimes the amount of nitrogen in the form of nitrous and nitric acids. The albuminoid ammonia does not actually exist in the water, but is formed in it by the analytical process—a better term, sometimes used, is albuminoid, or organic nitrogen. The greater the propor-

tion of this ingredient the worse the water, for the presence of a large quantity of nitrogenous organic matter is dangerous, whilst practically no amount of actual ammonia or nitric acid is injurious. Nevertheless, we do not like to find much saline ammonia in a water, as it generally indicates the presence of sewage. In a peaty water the albuminoid ammonia is often twenty times more abundant than the saline; but when sewage is present, the saline ammonia usually exceeds in quantity the organic ammonia. It is easy to understand why this should be so. The peaty matter in water slowly decomposes, whilst the urea which is usually present in sewage, and contains 47 per cent. of nitrogen, speedily becomes carbonate of ammonium. I often meet with a peaty yellow water containing per imperial gallon—

Albuminoid ammonia, - - - 0·020 grain,

Saline ammonia, - - - 0·001 „

whilst in a bright and sparkling water we may often have per gallon—

Albuminoid ammonia, - - - 0·008 grain.

Saline ammonia, - - - 0·012 „

I should much prefer to drink the former water, notwithstanding its flat flavour and yellow hue; for in the bright and colourless water the albuminoid matter would probably be derived from an animal source, and possibly contain the germs of a contagious disease.

In some waters large amounts of nitric acid are present. This is especially the case in the wells sunk in the carboniferous rocks. The nitric acid is generally derived from the oxidation of vegetable matter and, but to a limited extent, from manure. By filtration throughout large masses of soil the water is purified from organic matters, but it contains the products of their decomposition. I prefer a water free from nitrates, and derived from untainted sources; but in certain districts we must tolerate the nitrates, if the water present no other objectionable features.

Chlorine, in the form of common salt, is present in water polluted by sewage, but it is often found in large proportions in really good water. The significance of chlorine has been much exaggerated. In hard and good water it is often present to the extent of from 4 to 10 grains per gallon. Frequently it exists as magnesium chloride or calcium chloride.

It is desirable that the amount of albuminoid ammonia should be less than 0·01 grain per gallon, and of saline ammonia less than

0·008. In the best waters the albuminoid and saline ammonia are low down in the third decimal place.

In 1881 there were in Ireland 11 cities and towns governed by Corporations or Town Councils. Their aggregate population amounted to 683,502, and their valuation to £1,743,317. Their revenue amounted to £794,625.^a

The 9 townships surrounding the City of Dublin had a population of 95,400, a valuation of £390,667, and a revenue^b of £63,219.

There were 92 cities and towns governed by 'Towns' Commissioners; their population amounted to 434,138, their valuation to £671,153,^c and their annual revenue to £103,527.

The population of all these towns was therefore, in 1881, 1,213,040, and their valuation for rating amounted to £2,805,137. In Irish towns the valuation is about two-thirds of the actual letting value.

I have endeavoured to ascertain the nature of the water-supplies to these 112 cities, towns, and townships, and the following is a brief summary of the facts ascertained:—

THE ELEVEN TOWNS GOVERNED BY TOWN COUNCILS.

Belfast. — Population, 207,671; valuation, £568,137. The water is almost wholly supplied from a reservoir situated near Carrickfergus, about twelve miles from Belfast. The pressure is good, and the reports upon the quality made by Dr. Hodges, of Belfast, are satisfactory. It contains 12·6 grains of solid matters per gallon, and 0·11 part of albuminoid, and 0·07 part saline ammonia per million parts. These figures show that it is not equal to the Dublin pipe water.

Clonmel.—Population, 10,519; valuation, £15,424. Supplied by local pumps and wells. I have from time to time examined a large number of specimens of the water used in this town. On the whole, they have not been of the quality suitable for domestic purposes. As a rule they were exceedingly hard, containing nearly 100 grains of solid matters per gallon. A few were highly polluted with sewage. The waters from Clonmel, which I have lately analysed, were purer, probably because their sources were better protected from pollution. A town so large as Clonmel

^a These figures (with some corrections) I have taken from Thom's Directory for 1884, pages 668 to 670.

^b Exclusive of Drumcondra Township, of which I have no return.

^c Exclusive of a few small towns.

should be provided with a good supply of water, obtained from some of the neighbouring high grounds.

Cork.—Population, 78,361; valuation, £226,022. The supply of water is obtained from the River Lee, at a point about a mile above the city. Mr. O'Keefe's (Public Analyst for Cork) analysis of the water, made some years ago, did not give favourable results. He found that an imperial gallon contained—total solids, 5·57 grains, including albuminoid ammonia, 0·075 grain; saline ammonia, 0·04 grain; and chlorine, 0·661 grain. These figures indicate pollution. Since this analysis was made the waterworks have been improved, and the water is now filtered properly. Still a water supply from a river bordered by towns is not a desirable one. I think the sewage of Macroom enters the river at a point 27 miles above the City of Cork.

Drogheda.—Population, 12,516; valuation, £28,121. This town is supplied partly with pressure water supplied by a Waterworks Company, partly by local pumps. The pipe-water is collected at a gathering ground about two miles distance from the town, and stored in a reservoir. It is a fairly good water, but not equal to the pipe-water of Glasgow and Dublin. It contains about 13 grains of solid matter per gallon, and from 0·005 to 0·01 of albuminoid ammonia, and somewhat smaller quantities of saline ammonia. In winter the supply is abundant, but in summer it is so scanty that the supply to the houses is limited to two hours daily. A small reservoir, situated one mile from the town, supplies two fountains. Sixteen of the local pumps are in possession of the Corporation. I have analysed the water yielded by all of them. They are mostly free from sewage; but the greater number are too hard for washing with, or, indeed, for any purpose save flushing sewers, &c. Perhaps the Corporation might see their way towards purchasing the waterworks and extending them. The water-supplies of towns should always be under the management of the governing bodies thereof.

Dublin.—Population (of City), 249,486; valuation, £657,820. The gathering ground of the water supplied to Dublin consists of mountains, chiefly of the lower Cambrian formation, situated about 26 miles from the city, in the County of Wicklow. The reservoir is very large, and is capable of supplying 35 gallons per diem per unit of the population. At first the water impounded had a faint yellow colour, which gradually became deeper, and after three or four years became so deep as to excite alarm. The colour was caused

by the peaty and other organic matter in the reservoir becoming soluble by fermentation. After a time the hue became less intense, and now the water is almost colourless. It is soft. One imperial gallon contains about $4\frac{1}{2}$ grains of solid matters, 0.005 grain of albuminoid ammonia, 0.0008 grain of saline ammonia, faint traces of nitrates and nitrites, and 0.96 grain of chlorine. Its hardness is about 1.8° , of which 0.8 is permanent. It is one of the purest waters in the world. With respect to pressure and quantity, the citizens have nothing to complain of. Cost of the works, £640,682 10s. 2d. up to 1884.

There are some well-waters still used in Dublin. They are generally very hard, owing to the presence of large quantities of earthy salts. I have often found in Dublin pump waters from 50 to 75 grains of calcium sulphate per gallon. I consider most of these waters unfit for use, but there are some exceptions—notably the pump water in the Bank of Ireland; this water has the following composition per gallon:—

	Grains.			
Total solid matters	-	-	-	24.500
Including—				
Albuminoid ammonia	-	-	-	0.004
Saline ammonia	-	-	-	0.003
Nitrogen in nitrates and nitrites	-	-	-	0.090
Calcium sulphate	-	-	-	4.420
Chlorine	-	-	-	2.491
Oxygen required to oxidise organic matter				0.208
Hardness	-	-	-	1.8°

Kilkenny.—Population, 12,182; valuation, £33,155. This city is supplied wholly by local wells, and, but to a limited extent, from a river. I have analysed, I think, the water from all the public pumps and from many of the private. There is no pressure water. The water from the wells is exceedingly hard, owing to the presence of lime and magnesia salts. They contain from 50 to more than 100 grains of solids per gallon. The majority are free from actual sewage; but as a rule they contain extremely large quantities of nitric acid—a product of the decomposition of nitrogenous organic matter. The sources of the water are as a rule tainted, but the water as taken from the wells is in general so well filtered by passage through a calcareous soil that it is generally very free from organic matter. Some are, however, more or less polluted. Kilkenny is one of the Irish towns which most urgently require a good water-supply.

Limerick.—Population, 38,600; valuation, £65,547. This city is supplied with pipe-water taken from the river Shannon, about $1\frac{1}{2}$ miles distant from the city. For many years the quality of the water has been complained of, owing chiefly to its great turbidity, for the water was not filtered. The Corporation have recently purchased the waterworks from a company. It may be that the water supply to the city will still be taken from the Shannon, but I am of opinion that a better quality of water is procurable in sufficient quantities from drainage areas in the high grounds not very distant from the city. I have analysed several samples of water proposed to be supplied to Limerick, and consider them much superior to the Shannon water. Many of the local wells are still in use, but as a rule they furnish impure water.

Londonderry.—Population, 28,947; valuation, £74,595. High-pressure water is supplied from reservoirs situated outside the city. The quantity is insufficient for a constant service, but the Corporation propose to procure an increased supply. Professor Leebody's analysis shows that the water is of good quality. It is soft, containing nine and a half grains of solids per gallon. It is delivered unfiltered.

Sligo.—Population, 10,764; valuation, £18,619. This town will soon be supplied with pressure water of good quality and soft, taken from a reservoir situated five miles from the town. Estimated cost of the works, £28,000.

Waterford.—Population, 22,401; valuation, £39,866. Until very recently this city was wholly dependent upon local pumps, the water from which was, with few exceptions, of extremely bad quality. The worst water which I have, I think, ever analysed came from a public pump largely used in this city.

This water contained per gallon in grains—

Solid matters	-	-	-	-	-	385·8
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Including—

Albuminoid ammonia	-	-	-	0·4
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Saline ammonia	-	-	-	1·5
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Sodium chloride	-	-	-	76·0
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Calcium sulphate	-	-	-	34·0
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The amount of ammonia in this water exceeded that often present in sewage.

A few years ago a new supply of water was obtained by impounding the drainage of a hilly region at Knockaderry, 10 miles from the city. The water proved to be extremely brown in colour,

which circumstance created great dissatisfaction amongst a large section of the citizens, some of whom refused to use the water. I predicted that in the course of a few years the hue of the water would be much less deep. The last specimen sent to me for examination, though still somewhat coloured, was comparatively pale as compared with the specimens sent to me three or four years ago. The citizens now seem satisfied with the water. The cost of the waterworks, &c., was £77,000.

Wexford.—Population, 12,055; valuation, £16,011. I have analysed several specimens of pump water used in this town. The majority were soft and fairly good, but several were hard and bad. One contained 95·2 grains of solid matter per gallon. A high pressure supply of good water was lately procured. The waterworks have cost £30,000.

THE DUBLIN TOWNSHIPS.

These districts are, with exception of a very small portion of their area and exclusive of Rathmines, supplied with the Vartry pipe water (the same as that furnished to Dublin). Rathmines township is at present supplied with water from a canal. It is hard and of somewhat doubtful purity. The township will, however, soon be supplied with soft and remarkably pure water collected from the Dublin mountains.

THE NINETY-TWO TOWNS UNDER TOWNS COMMISSIONERS.

Antrim.—Population, 1,647; valuation, £3,554. Supplied with pump water of, it is believed, good quality and palatable. The “Six-mile” river, which flows past the town, supplies water for various purposes.

Ardee.—Population, 2,622; valuation, £4,060. The water is derived from pumps and wells. The quality is believed to be fairly good, but no analyses of it have, I believe, been made.

Armagh.—Population, 10,070; valuation, £16,925. A high pressure supply from a small lake, two and a half miles from the city, was procured some time ago. It is rather peaty, and when in summer the lake falls considerably the colour is somewhat high. On the whole, however, the water supply of this city is fairly good.

Athlone.—Population, 6,755; valuation, £9,671. This town is supplied with water from the Shannon, which flows through it. There are seven pumps attached to wells. The water supplies are on the whole fairly good.

Athy.—Population, 4,181; valuation, £5,680. I have examined a great number of the well waters, which furnish exclusively the supply of this town. About one-third were very much polluted, and the rest were first or second class waters. Some of the pump waters in this town contain about 100 grains of solids per gallon. This town requires an improved water supply.

Auchnacloy.—Population, 1,333; town revenue, £77. The town is supplied by wells, one of which is much used by the poorer inhabitants, though the water is impure.

Bagenalstown.—Population, 2,141; valuation, £3,414. The supply of water is from local wells and a river. Some of the well waters are fairly good, others are of indifferent quality. Some of the water is filtered.

Balbriggan.—Population, 2,443; valuation, £4,014. The water is derived from wells and pumps. It is far too hard for potable purposes, and in some instances it is otherwise impure.

Ballina.—Population, 5,760; valuation, £8,154. This town will soon be supplied with high pressure and good water from Loch Brohly, six miles distant. Professor Townsend, C.E., informs me that the contract for executing the works was £8,556. This was exclusive of law costs, &c. The supply will be 20 gallons per head.

Ballinasloe.—Population, 4,772; valuation, £8,740. The town is supplied wholly from local wells, some of which yield an inferior water.

Ballybay.—Population, 1,654; town revenue, £142. This town has an insufficient supply of water, which, moreover, is of very bad quality. It is derived chiefly from wells; but a small river yields water which is much used, though it is known to be highly polluted.

Ballymena.—Population, 8,883; valuation, £21,423. I have analysed twenty-one of the well waters of this town; with some exceptions they proved to be hard and fairly good. One of these waters contained 137·9 grains of solid matters per gallon, including the enormous quantity of 37·64 grains of nitric acid. Another contained 136½ grains of solids, including 19·11 grains of nitric acid. An improved water supply from a distance of about seven miles is now being procured at a cost of £23,000.

Ballymoney.—Population, 3,049; valuation, £6,034. The supply is taken from local pumps, and is deficient in both quality and quantity. But a good high-pressure water will soon be supplied to all the houses in the town at a cost of £6,000.

Ballyshannon.—Population, 2,840; valuation, £4,022. The supply is from pumps and wells. I have analysed only one water from this town, and it proved to be a good one, but the inhabitants are dissatisfied with their water-supply, and the question of improving it has lately been considered.

Banbridge.—Population, 5,609; valuation, £12,716. I have examined about 40 well waters used in this town. Most of them were very hard, and several were polluted with sewage. This town urgently requires an improved water.

Bandon.—Population, 5,945; valuation, £9,621; town revenue (1881), £1,890. Supplied by wells and pumps—one of the waters of which I have examined was hard, but otherwise good. A scheme for supplying the town with high-pressure water is now under consideration, and the proposed water is being analysed in my laboratory.

Bangor.—Population, 3,006; valuation, £10,287. Works to supply high-pressure water are nearly completed. They will cost about £10,000. I have analysed the water proposed to be used, and have found it to be of good quality. I have found the pump waters of this town to be superior to average well waters.

Belturbet.—Population, 1,807; town revenue, £375. The River Erne and three pumps furnish the water. One of the pumps yields a supply of very doubtful quality.

Boyle.—Population, 2,994; valuation, £3,847. The town is supplied with well waters only. Those that I have analysed proved to be fairly good.

Bray.—Population, 6,535; valuation, £24,503. This town is supplied with good high-pressure water.

Callan.—Population, 2,340; valuation, £2,002. Supplied by local pumps, some of which are of doubtful quality.

Carlow.—Population, 7,185; valuation, £11,157. The town depends upon local wells for its supplies. I have analysed many of the waters used in this town, and, on the whole, have an unfavourable opinion of them. Many of them contain from 70 to 112 grains of solids per gallon, including from seventeen to twenty-two grains of nitric acid. The rise of the River Barrow appears to affect the quality of the Carlow well waters. The town urgently needs a good supply of high pressure water.

Carrickfergus.—Population, 10,009; valuation, £5,561; revenue, £1,275. The town is supplied with good water from reservoirs, situated at one and a half miles from the town.

Carrickmacross.—Population, 2,002; valuation, £2,893. This

town is supplied by well waters, several of which I have analysed and found to be impure.

Carrick-on-Suir.—Population, 6,583; valuation, £8,836. This town has no pressure water; some of the well waters which I have examined are of good quality.

Cashel.—Population, 3,961; valuation, £5,695. A good supply of pure water of high pressure is obtained from the neighbouring hills. It is filtered before being delivered to the city—for this small but ancient place is entitled to the rank of city.

Castlebar.—Population, 3,855; valuation, £4,132. The town depends upon wells and pumps. The water from them is, as usual in such towns, not altogether pure.

Castleblayney.—Population, 1,810; town revenue, £100. Supplied by local wells and pumps. The water is believed to be fairly good.

Cavan.—Population, 3,050; valuation, £5,155. The results of analyses of fifteen of the pump waters in this town enable me to state that Cavan is one of the towns in this country most urgently requiring good water. There are hills not far distant from which good supplies might be procured.

Clonakilty.—Population, 3,676; valuation, £4,824. A supply of good water gathered from neighbouring hills is delivered, under pressure, to the town.

Clones.—Population, 2,216; valuation, £3,356. The supply is chiefly from five public pumps, two of which are adjacent to and below the level of churchyards. The local sanitary authority (the Board of Guardians) has hitherto not complied with the oft-expressed request of the Town Commissioners, for a more abundant and purer supply of water.

Coleraine.—Population, 5,899; valuation, £12,805. This town is supplied with water collected from springs situated about three miles distant. It is conveyed direct from the springs, and has a considerable degree of pressure. In case of a contingency water may be also obtained from a small reservoir, which contains sufficient for fourteen days' supply. Fifty gallons per head is the quantity delivered. The water contains $11\frac{1}{2}$ grains of solids per gallon, and is very free from organic matter. I have analysed two specimens of pump water from this town, and found them to be of good quality. The waterworks of this town have cost £9,600.

Cookstown.—Population, 3,870; valuation, £6,187; town revenue, £189. This town has no high-pressure water. Fifteen public

and several private pumps supply water, concerning which local opinion is much divided. Some of the townspeople are satisfied with its quality; others consider it for the most part impure. In 1876 seven of the waters used in this town were submitted to me for analysis. I found that they were free from sewage. The total solids varied from 8 to 45 grains per gallon. Professor Hodges has, however, found impurities in some of the pump waters. Some of the waters which I have examined are undoubtedly too hard. The subject of obtaining a supply of good high-pressure water has long been discussed. A scheme for this purpose was proposed in 1876 by Mr. J. F. Mackinnon. He proposed to take water from Loughbrackin, a distance of $7\frac{1}{2}$ miles. The cost was estimated at £8,430. He proposed another scheme for taking water from Mountober springs, situated $4\frac{1}{2}$ miles from the town. This scheme, which involves the construction of a reservoir, would cost as estimated £12,500.

Cootehill.—Population, 1,789; town revenue, £152. The Town Commissioners have control of five pumps, which supply very inadequately the wants of the town. Many private wells and some small streams are brought into requisition to make up the deficiency. Some of the pump waters are very inferior, and the town ought to be provided with a good and sufficient supply.

Downpatrick.—Population, 3,419; valuation, £8,001. Some of the pump waters in this town are exceedingly hard, and some are impure. For several years past the Downpatrick Board of Guardians have been discussing schemes for supplying the town with pure water; but though much expense has been incurred by them in commissions, &c., the supply is still wanting.

Dromore.—Population, 2,491; valuation, £4,363. I have lately analysed 9 waters from the public supplies in this town. Several of them were very hard and impure, and most of the others were second class waters.

Dundalk.—Population, 11,913; valuation, £20,692. The pump waters in this town are, on the whole, of very inferior quality. A good supply of almost colourless water will, however, soon be procured from neighbouring hills. It is one of the purest waters that I have ever examined. A loan of £26,000 for waterworks has been secured.

Dungannon.—Population, 4,084; valuation, £8,114. A high-pressure supply is procured from a distance of $7\frac{1}{2}$ miles, at a cost of £13,500. It is of good quality.

Dungarvan.—Population, 6,306; valuation, £8,265. All the pump waters sent to me from Dungarvan proved to be free from pollution.

Ennis.—Population, 6,307; valuation, £6,944. The well waters in this town are, as a rule, very impure. One of the town pumps was closed by order of the magistrates sometime ago, on the application of the local authorities. My analysis proved that the water was largely composed of sewage. Ennis has lately been supplied with pressure water from a neighbouring reservoir connected with a lake. The cost of this improvement has been £11,000. It is slightly peaty, but good in all other respects.

Enniskillen (population, 5,712; valuation, £11,714), is supplied with high-pressure water, taken from Lough Erne at a point distant $4\frac{1}{2}$ miles from the town. The lake has an area of 36,923 acres, and its waters ought to be pretty pure, but as supplied to the workhouse I found it rather yellow. It contained 7·7 grains of solids per gallon. The pump waters of Enniskillen are not, as a rule, very good. The water rate is 6d. in the pound on the Poor-law valuation.

Fermoy (population, 6,454; valuation, £9,931) will soon be supplied with good high-pressure water from a reservoir situated $3\frac{1}{2}$ miles from the town. The works will be completed at a cost of £13,000.

Fethard (population, 1,926; town revenue, £168) is supplied with 4 public and several private pumps. One of the pumps yielded water which I found to be very impure.

Galway.—Population, 15,597; valuation, £26,240. High-pressure water is supplied from the river Corrib, which discharges the waters of a large lake—Lough Corrib—into the sea. The water contains about 11 grains of solids per gallon, 0·008 grain of albuminoid ammonia, 0·002 grain of saline ammonia, and 1·4 grain of chlorine. Hardness, 7°. It is, therefore, a fairly good water, but not equal in colour or purity to the Dublin pipe water. The pump waters in Galway are all hard, from presence of lime and magnesia salts, and some of them are somewhat impure.

Gilford.—Population, 1,324; valuation, £1,834. Supplied by local wells, the water of which is pretty good.

Gorey (population, 2,450; valuation, £3,148) is supplied with high-pressure water of good quality, but, so far as 1884 is concerned, deficient in quantity. One spring supplies a reservoir, and water from other springs is conveyed direct to the town.

Holywood.—Population, 3,293; valuation, £12,480. This town was, in 1883, supplied with water collected at a distance and delivered to the town under pressure. My analysis shows that it contains 14 grains of solid matter per gallon, including 0·005 grain of albuminoid ammonia; saline ammonia, 0·006; nitrogen in nitrites and nitrates, 0·015 grain; chlorine, 1·886. The water is nearly colourless. Cost of the waterworks, £10,000.

Keady.—Population, 1,598; town revenue, £253. The public fountains and some of the houses are supplied with high-pressure water from a reservoir in connexion with Clea lake. Dr. Allen, Chairman of the Town Commissioners, informs me that some of the well waters still used are scarcely fit for potable purposes. Several of the wells dried up this year.

Kells.—Population, 2,822; valuation, £3,508. The water is derived from pumps and wells. It is mostly very hard and some of it impure.

Killarney.—Population, 6,651; valuation, £4,928. Many of the pump waters in Killarney are soft and pretty good, but several are very impure. A supply of good soft water will soon be collected from a stream from neighbouring hills and stored in a tank. The cost is estimated at £8,000.

Kinsale.—Population, 5,386; valuation, £5,454. I have examined a pretty fair specimen of water for the Kinsale Harbour Commissioners. This is all the knowledge which I possess of the water supplies of this town.

Larne.—Population, 4,716; valuation, £4,782. This town has just been furnished with a supply of water from the "Sallagh" springs, situated on elevated ground, $3\frac{1}{2}$ miles from the town. The water is good and abundant. There is a tank, but the water in it is intended to be used only in case of fire.

Letterkenny (population, 2,188; valuation, £3,215) was long dependent upon the scanty and impure supplies of water furnished by local wells, but now it has abundance of good water, obtained from a distance. The main reservoir is one mile from the town.

Limavady (population, 2,954; valuation, £5,795) is supplied with high-pressure water from a tank having a capacity of 135,000 gallons. The water is good, and is collected from springs. The works cost £6,000.

Lisburn.—Population, 10,753; valuation, £18,751. The greater part of the town is supplied with pressure water from a reservoir, one mile distant. Its composition, according to Dr. Hodges, is as

follows:—Total solids, 12·6 grains per gallon; albuminoid ammonia, 0·199 parts per million; saline ammonia, 0·055 parts per million. The quantity of albuminoid ammonia appears to be excessive. On the outskirts of the town the people depend upon wells.

Lismore (population, 1,860; valuation, £2,212) is supplied with high-pressure water brought direct from springs in the clay slate rocks lying north of the Blackwater. The water is very good, but in summer it is occasionally defective, and fails to supply the houses in the higher parts of the town. The supply is usually turned off at night. Lismore therefore requires an improved water supply.

Longford.—Population, 3,590; valuation, £7,029. I have analysed several of the pump waters, and found the greater number to be impure.

Loughrea.—Population, 3,072; valuation, £3,665. The water used is taken chiefly from a neighbouring lake, and is delivered with some degree of pressure into many of the houses. My analysis of the water, as supplied to the town, showed that it had in some way become somewhat polluted. The water supply to Loughrea requires investigation. The water is pumped by turbines into a tank having a capacity of 118,000 gallons. Cost of the works, £3,770.

Lurgan.—Population, 10,135; valuation, £18,348. The water used in this town is derived from public pumps and private wells. Their quality varies considerably. Several specimens which I have analysed proved to be impure. One contained 113 grains of solids per gallon.

Mallow (population, 4,439; valuation, £6,478) is famous for its springs and spas; yet in some parts of the town the pump waters are impure. When Asiatic cholera visited this town it was in the quarters where the impure water was used that the disease was most prevalent. The town is now supplied with pressure water from a reservoir at a cost of £6,250.

Maryborough.—Population, 2,872; valuation, £3,869. The waters—derived from wells and pumps—is extremely hard, but generally free from sewage impurities.

Middleton.—Population, 3,358; valuation, £5,675. The waters in use in this town are deficient in quality and quantity. The Board of Guardians have undertaken to supply the town with pure water.

Monaghan.—Population, 3,369; valuation, £5,967. Nine public pumps and numerous private wells and pumps supply water to the

inhabitants. Some of the wells are 50 feet deep. In most cases the water is pure.

Mountmellick.—Population, 3,126; valuation, £4,052. Excessive hardness is the characteristic of the well waters which supply this town. Although some of them are free from pollution, others are not so; and, on the whole, I think Mountmellick requires an improved water supply.

Mullingar.—Population, 4,787; valuation, £7,541. I have examined a large number of the pump waters which supply this town; some of them are fairly good, but others are hard and bad. In one I found 137 grains of solid matters per gallon, including the very high proportion of 0·05 grains of albuminoid ammonia.

Naas (population, 3,808; valuation, £7,612) depends altogether upon local wells and pumps, many of which I have found to be very impure.

Navan.—Population, 3,873; valuation, £5,660. The town depends altogether upon supplies from local sources, which have no pressure. There are nine public pumps, and many public and private wells, including a so-called spa. Some of these waters are good, though somewhat hard for detergent purposes; others are of indifferent quality. In one I found 119 grains of solid matters.

The following are analyses of the water of the River Boyne, taken above the town, and of the Blackwater taken in the town:—

One imperial gallon (70,000 grains) of each contain—

	Boyne. Grains.	Blackwater. Grains.
Total solid matters - -	19·600	13·300
Including—		
Albuminoid ammonia -	0·012	0·012
Saline ammonia -	0·002	0·002
Nitrogen acids - -	traces.	traces.
Chlorine - - -	0·980	0·985

The Blackwater filtered would furnish a better quality of water to Navan than it obtains from the local wells.

Newbridge.—Population, 3,372; valuation, £4,325. The pump waters which supply this town are exceedingly hard; in four of them I found more than 200 grains of solid matters per gallon. They are, however, pretty free from actual sewage matter.

New Ross.—Population, 6,670; valuation, £8,039. Four conduits convey water from springs situated in the higher portion of the town, and deliver it with some degree of pressure to the lower

portions of the town. In 1877 I found the water from the principal tank was fairly but not very good. There are six public pumps which also supply water to the town. Their quality is variable as a rule. The New Ross waters are pretty soft.

Newry. — Population, 15,096; valuation, £32,450. This important town is supplied with water taken from the Lake of Camlough, which covers an area of 160 acres, and is situated at a distance of four miles from the town. 650,000 gallons are delivered at a very high pressure, and the great majority of the houses have the water laid on to their interiors. There are numerous street fountains for the use of the poorer classes. The composition of the water is somewhat variable, but on the average it contains about 11 grains of solid matters, and very moderate amounts of albuminoid and saline ammonia. Newry is therefore one of the few towns in Ireland provided with really good and abundant water.

Nenagh (population, 5,422; valuation, £8,312) is altogether supplied by well and pump waters. I have not examined many of them, but the few which have come under my observation have been pretty good.

Newtownards.—Population, 8,676; valuation, £10,005. I have made a very large number of analyses of the water used in this town. Twenty-two of the pump and well waters were analysed in 1877; of these 7 were unfit for use, and some of the others were second class. The solids in solution varied in amount from 15·4 to 91 grains per gallon. Eighteen specimens analysed in 1881 were of better quality, their worst features being excessive hardness and the presence of much nitric acid. Three pump waters examined in 1882 were fairly good.

Omagh.—Population, 9,755; valuation, £6,251. Pressure water is supplied to this town. Its composition I found in 1882 to be as follows:—

One imperial gallon contained—

Total solid matters	-	-	-	-	4·900 grains
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Including—

Albuminoid ammonia,	-	-	-	0·006.
Saline ammonia,	-	-	-	0·004
Nitrogen acids,	-	-	-	traces.
Chlorine,	-	-	-	1·415.

The water is derived from a reservoir $2\frac{1}{2}$ miles distant from the town. Amount of waterworks loan, £12,115.

Parsonstown (population, 4,126; valuation, £8,712) has only

pumps and open wells to procure water from. These waters are very hard. Some of them are free from organic impurities, others are polluted. In one I found 111·15 grains of solids per gallon.

Portadown.—Population, 4,955; valuation, £17,066. Supplied by local wells. In one of their waters I found 114 grains of solids and 30 grains of chlorine. It was, however, free from sewage. Others examined by Dr. Hodges and the late Mr. Whitla were with one exception found to be pretty good.

Queenstown.—Population, 9,755; valuation, £19,908. This town has just secured an excellent supply of water from a distance of about 8 miles, and at a cost of about £20,000. I have analysed the water, and found it to be very pure.

Rathkeale (population, 2,549; revenue, £192) is supplied with pump water only, which, on the whole, appears to be of fairly good quality.

Roscommon.—Population, 2,117; valuation, £2,880. Supplied only by pumps, the water from which is pretty good.

Strabane.—Population, 4,196; valuation, £9,187. Has a high-pressure supply, but the quantity is most defective, and the town may be said to be really badly off for water.

Skibbereen.—Population, 3,631; valuation, £4,699. The springs and wells which supply this town are deficient in quantity, and some of them in quality; during the recent hot weather they almost disappeared. The Board of Guardians—the sanitary authority—have undertaken to improve the water supply of this town, but up to the present have not realised their promises.

Tandragee.—Population, 1,592; town revenue, £56. Four water pumps supply this town. I have analysed three of them; one was bad, one good, one indifferent.

Templemore.—Population, 2,800; valuation, £3,886. Has a rather scanty supply of indifferent quality of pump and well waters.

Thurles.—Population, 4,850; valuation, £6,107. Local wells supply the water used for potable purposes, and for other purposes the River Suir is made available. One of the well waters sent to me for analysis in June last was very hard (105 grains solids per gallon), one was slightly polluted, and another specimen was found to be pure.

Tipperary.—Population, 7,274; valuation, £8,663. The town is supplied by a spring termed Church Well (which has not failed during the recent drought), and several public and private pumps and wells. Several of the wells are very hard—one contains 137·9

grains of solids per gallon and is somewhat impure; yet, on the whole, this town is pretty well supplied with water, which, however, has the disadvantage of not being delivered under pressure. The water used in the barracks was analysed in 1877 at Netley by Professor De Chaumont and found to be "usable."

Tralee.—Population, 9,910; valuation, £12,303. The well waters of this town are generally unfit for use. I have analysed about 30 of them. Some contain from 100 to 200 grains of solid matters per gallon. Recently a supply of water from a tank situated $4\frac{1}{2}$ miles from the town has been procured, and it has been conveyed under high pressure into many of the houses in the principal streets.

The composition of this water, according to my analysis, is as follows. I give it as an example of a really good water.

One imperial gallon (70,000 grains) contains:—

	DISSOLVED					Grains
Lime -	-	-	-	-	-	0.24
Magnesia	-	-	-	-	-	0.11
Potassium and sodium -	-	-	-	-	-	0.69
Oxide of iron, silica, &c.	-	-	-	-	-	0.28
Chlorine	-	-	-	-	-	0.68
*Organic and volatile matters	-	-	-	-	-	2.50
Total solid matters per gallon						4.00
*Including organic nitrogen	-	-	-	-	-	0.004
„ ammonia	-	-	-	-	-	0.002
Nitric acid	-	-	-	-	-	faint trace.
Nitrous acid	-	-	-	-	-	none.

Matters Suspended in the Water.

Organic and volatile (at a red heat)	-	-	-	-	-	0.55
Fixed solids	-	-	-	-	-	.17
Total suspended matters						.72

One gallon of this water, therefore, contains of solid substances:—

						Grains
Suspended matters	-	-	-	-	-	0.72
Dissolved matters	-	-	-	-	-	4.00
Total solid matters						4.72

Of the solid substances 0.86 grain is precipitated by boiling a gallon of the water for 10 minutes.

Trim.—Population, 1,586; valuation, £2,115. The town has no pressure water. Many of the pump and well waters are impure. Two of the public pumps were closed by order of the sanitary authorities, my analysis having shown that they were unfit for use. Trim has, for a small town, a very large revenue—namely, about £800 a year. Good water is procurable from springs situated near the town. There would, therefore, seem to be no good reason why this town should not be supplied with pure water.

Tuam (population, 4,223; valuation, £4,035) is supplied by pumps and wells, and their waters are “good, bad, and indifferent,” as is usually the case in such towns. In a water sent to me from this town by Mr. French, solicitor, there were 164 grains of solids per gallon, and in other respects the water was bad.

Tullamore.—Population, 5,098; valuation, £5,392. The water supply is derived from five public pumps, and from private pumps and wells. It is generally very hard, but, on the whole, free from pollution.

Westport.—Population, 4,469; valuation, £6,243. The town is supplied by wells and pumps. Their waters are generally somewhat peaty, but free from sewage.

Wicklow.—Population, 3,391; town revenue, £1,361. The majority of the pump waters in this town are impure or second class. A pressure supply has lately been procured. The reservoir is about one mile from the town. The water is of good quality, though somewhat high in colour; but no doubt, as in similar cases, the colour will in time become less intense. The waterworks cost about £6,000.

Youghal.—Population, 5,936; valuation, £9,571; town revenue, £2,144. Four public pumps and several private wells supply the inhabitants with water. The quality is locally believed to be good. I have not seen any analysis of Youghal waters.

In concluding these brief notices of the supplies of water to Irish towns, I have to point out that, as a rule, they are of defective quality, and that, in the great majority of cases, the towns of Ireland have no high-pressure water, which is so useful in the case of fires and for other purposes. The Metropolitan area and 8 of the towns governed by Corporations have high-pressure water supply, but very many of the 92 smaller towns are dependent upon local wells, &c., which, on the whole, furnish impure supplies.

ART. XVIII.—*On the Nature and Prevention of the Graver Fevers of Childbed.* By WILLIAM C. NEVILLE, M.A., M.D., M.A.O., Univ. Dubl.; late Assistant-Master, Coombe Hospital; Physician to the Pitt-street Institution for Diseases of Women and Children; Secretary, Obstetrical Section, Academy of Medicine in Ireland, &c.

[Continued from page 332].

CAN THE POISON OF SEPTIC ABSORPTION OR INFECTION BE CARRIED IN THE AIR AND ACT THROUGH THE LUNGS? This is a very difficult question to answer, because in most cases other more certain carriers of the contagia may be found if sought for. It is unlikely that a practitioner, whose footsteps are being tracked by this disease, carries about with him a poisonous atmosphere sufficiently saturated to poison the atmosphere of one lying-in room after another. It is infinitely simpler and more reasonable to suppose that in these cases the poison is directly implanted upon the genital canal by the hands, instruments, or other impedimenta of midwifery practice. A poison-laden atmosphere has chiefly been assumed in order to explain the prevalence of these diseases in hospitals. Thus, Dr. More Madden has quite recently expressed his conversion to the view that "in all large hospitals where a number of women are crowded together a specific puerperal fever is necessarily created." This opinion is not, however, supported by such well-established facts as can justify the raising once again of the cry "delenda est Carthago." Winckel considers the question in detail, and concludes that "the communication of the disease through the medium of the air of a lying-in establishment is extremely rare." He adds, that if such a mode of origin exists at all, "the infection is to be attributed to the direct action of an atmosphere impregnated with infectious elements upon some portion of the mucous lining of the genital canal," rather than to "an absorption of the virus on the part of the lungs, and its subsequent deposit in the uterus." Why invoke a "specific puerperal atmosphere" as an efficient cause of the disease in hospitals when the records of private practice abundantly prove that it can be generated without such? It is the more needless to make such an assumption, since the other opportunities for direct transfer of the contagia are so much more numerous in hospitals used for clinical teaching than in private. And experience has proved that the most perfect ventilation is, by itself, no sure safeguard against "hospital epidemics;"

while these have been now almost completely banished by restricting the number of local examinations during and subsequent to labour, and by insisting that the hands and instruments necessarily used should be, in the first instance, rendered properly aseptic. How does a specific puerperal atmosphere explain the fact that the subjects of difficult and protracted labours, primiparæ and others, in whom local examinations are naturally frequent, and generative lesions more marked than is normal, are specially liable to suffer from these diseases? Certain facts seem to be quite subversive of this doctrine:—Such as that those who escape examinations during labour—*e.g.*, the subjects of street deliveries—enjoy a comparative immunity; that a prolonged stay in hospital previous to delivery by no means enhances the risk; and that the periods of greatest prevalence of disease in hospitals have not always corresponded with the periods of the greatest aggregation of patients within its wards.

Still it is quite certain that impure air—such as may be caused by over-crowding, defective hygienic conditions, ventilation, &c.—has a most important effect in predisposing the women who have to breathe it to attacks of these affections, and very probably also in aggravating their consequences. The same law holds good for surgical septicæmia of every kind. But it is unproved that bad hygienic conditions can generate these diseases, *per se*, though the actual germs of such may be supposed to find in them a peculiarly fruitful soil. Under these conditions, also, puerperal wounds fail to heal kindly; their surfaces assume a diphtheritic-like appearance, and they absorb septic poisons or organisms with unusual facility.

Certain authorities, mostly French, believe that not only is the disease communicable through the air, but that it may be generated by the pulmonary absorption of the poison. Among these may be mentioned Hervieux, Tarnier, Doleris, and Charpentier—all of whom, however, admit that infection through the genital tract is a much more common occurrence. So far, I know of no facts which would coerce me into accepting this opinion. But if true, the poison which is taken up from the air by the lungs is certainly not the same as that which enters by the more usual channels of infection. Doubtless, the various kinds and channels of infection are not yet thoroughly understood or known, and it is wiser to suspend our judgment upon some points concerning which a younger and fuller knowledge may in due time enlighten us. But exceptional sources of puerperal fevers leave untouched the main question of cause and prevention.

IN WHAT SENSE, IF ANY, MAY PUERPERAL FEVERS BE INCLUDED UNDER THE COMMON TERM PUERPERAL SEPTICÆMIA? It is now customary to assert that "Puerperal Fever" is nothing more or less than "Puerperal Septicæmia"—an assertion which is of no practical value unless the meaning given to the term septicæmia be clearly understood and defined. There is no necessary gain by the mere substitution of one term for another, when by the new, as by the old, our intellects may be imprisoned and our experience misinterpreted. Thus the term "septicæmia, in this connexion, has been so used by some writers as to support the doctrine—essentially erroneous, as I take it—that puerperal fevers are of one kind. One advantage, indeed, the new nomenclature has, in that by its adoption the old idea of a specific relation between puerperal fevers and puerperality has been abandoned. But only in so far as septicæmia is of different kinds can this term be fitly employed to cover the various causative and pathological processes of puerperal fever.

The term septicæmia must here be used, if at all, as including cases of wound-poisoning, and of wound-infection—*i.e.*, of septic poisoning (*sapræmia*), and of septic infection (*septicæmia proper*). Very closely related to the latter must also be considered other traumato-infective diseases, such as erysipelas or diphtheria, for the development of the seeds of either of which the local and general conditions of childbed appear to offer a peculiarly receptive soil. An (1) absorbent and wounded surface, and (2) the presence of certain kinds of micro-organisms, septic or pathogenic, are the common factors by which these different diseases are related to one another.

NON-INFECTIVE SEPTICÆMIA OR TRAUMATO-TOXIC PUERPERAL FEVERS.

Septic poisoning or intoxication (Panum and Bergmann)—the *sapræmia* of Matthews Duncan. This is the condition produced by the systemic absorption of the soluble chemical (unorganised) products of bacterial decomposition. Combined with the symptoms of systemic poisoning there may also exist local tissue changes (inflammation or ulceration), produced at the site of absorption by the irritation of the bacteria themselves or of their products. The poison is not capable of any increase or reproduction within the body, and the results observed are directly proportional to the rapidity and amount of the putrid poison absorbed.

There are probably also different varieties of septic poison—elaborated by the action of different septic micro-organisms—as yet unknown by analysis.

The expression "autogenetic puerperal fever" has been, with partial truth, applied to this variety. The putrefaction by which the poison is produced depends on the access to the genital passages of an external cause, and is not therefore truly intrinsic in its origin. The bacterial elements of decomposition exist, however, in the air, which so easily finds an entrance into, or deposits them on, the genitalia both during and after labour. Apart from the air, also, these putrefactive germs are extremely ubiquitous, existing at all times in the genital passages, and may, moreover, be introduced at any time by the hands or instruments during labour. The entrance of air does not therefore seem so essential to these putrefactive processes as has been sometimes assumed. Should there exist any retention of, or obstruction to, the free outflow of the lochia after labour, septic decomposition and poisoning may quickly ensue. Some amount of stagnation is needed for the development of the micro-organisms in sufficient quantities, and a free and rapid discharge of the lochia does not allow time for decomposition. Retention of the lochia or secundines for a sufficient time inevitably leads to putrefactive changes and foetid discharges.

Despite the common belief to the contrary, this form of childbed fever is rather rare, since absorption does not readily occur (without accompanying locally destructive action) through granulating surfaces, and decomposition has rarely had time to take place before the puerperal wounds have advanced so far towards healing. Its most frequent cause is to be found in the decomposition of some retained and partly adherent portions of the secundines, and especially of the placenta. In these cases involution is impeded, the uterine sinuses are kept open, putrefactive and destructive processes go hand-in-hand, and absorption readily occurs. For these reasons septic poisoning is more common after an incomplete abortion than after labour at term, the converse of what obtains in the case of the truly infective fevers—a clinical fact which has been largely overlooked.

Septic poisoning is that form of puerperal fever which is most amenable to treatment. Unless a fatal dose of the poison has already been absorbed, the patient may be saved by the immediate removal of putrefying remains of the secundines, washing out the uterus with such solutions as destroy the bacterial causes of decomposition, and providing for subsequent efficient drainage. Foetid lochia are frequently noticed with no, or only slight, fever—a fact due to the lateness of putrefaction and the freedom of the outflow.

For somewhat similar reasons septic poisoning is rather rare in cases of uterine carcinoma, even though an extremely foetid discharge marks its progress.

Septic organisms (*e.g.*, *Bacterium termo*) are not infective, nor can they, under any circumstances, become so. Consequently, in a pure case of septic poisoning, no micro-organisms are to be found in the blood or other tissues of the patient during life, mistaken ideas on this point having arisen from the examination of the blood in cases of "mixed infection," or of blood removed from the body some time after death. For a like reason the lochia, though teeming with microphytes, possesses no infective properties. The microphytes are simply septic and not pathogenic. Hence this variety of puerperal fever occurs sporadically, and never in groups of cases dependent one upon another.

The noteworthy points in relation to cases of septic poisoning distinguishing them from those infective diseases next to be considered are therefore these—1. They result from the absorption of chemical (unorganised) poison as opposed to living (organised and pathogenic) microphytes; 2. The septic organisms exist only externally to the body, which they never invade during life; 3. They are associated with retention or stagnation commonly, and with foetor always of the lochia; 4. They occur sporadically, never in groups, and their symptoms are of relatively later supervention; 5. They are relatively frequent after abortions, infrequent after full-time labours; 6. They are much more amenable to treatment than the traumato-infective fevers.

The graver forms of childbed fever result from entirely different processes. They are TRAUMATO-INFECTIVE FEVERS, due to the introduction into the system and diffusion through the lymphatic or blood vessels, of living self-reproducing organisms. These are the cases of "heterogenetic" puerperal fevers, the pathogenic contagia of which are introduced from without, and find a ready entrance into the system as a result of local and general conditions already dwelt on. All that is needed in such a case is the presence of pathogenic bacteria, which, grafted on the generative organs under favourable conditions, may invade the tissues, and there spread and propagate themselves. We have seen that in the non-infective cases the violence of the symptoms were directly proportional to the amount of the soluble chemical poison absorbed. In the traumato-infective diseases, on the contrary, the inoculation with the minutest quantity of infective material containing patho-

genic micro-organisms suffices to induce the most fatal results. The organisms may multiply with amazing rapidity within the body, are commonly present in great numbers in the lochial discharges, and may therefore be transferred from sick to healthy puerperæ with fatal facility. Hence the rapid spread of these fevers in hospitals or among the patients of a particular nurse or physician. An initial case of this kind is the nucleus of a so-called epidemic or succession of cases.

Another clinical characteristic of these fevers consists in the earliness of the supervention of their symptoms. Inoculation occurs most often during labour, probably (because usually at the hands of nurse or physician) during the earliest vaginal examinations. And, lastly, must be noted their extreme fatality, depending upon the fact that long before their first symptoms are observed the micro-organisms have established themselves securely out of reach.

The experimental prototype of this class is to be found in Davaine's septicæmia, induced by the injection of putrid bullock's blood into the subcutaneous tissue of rabbits. The injections were by no means always successful in producing the infective disease, because (though swarming with micro-organisms) the putrid blood only occasionally contained the true infective agent—a pathogenic bacterium. Sometimes the injection was followed by a very quickly fatal septicæmia, and the smallest quantity of the diseased rabbit's blood then sufficed without fail to reproduce the disease in other rabbits—and so on *ad infinitum*. It has been shown (Dowdeswell) that if the affected rabbit's blood be properly sterilised it loses pathogenic properties, and also that the special bacterium is one which does not normally exist in any phase in rabbit's blood. But it has so far been found impossible to cultivate this micro-organism separately with a view to culture test experiments.

Other experimental instances of like infective diseases are to be found in Koch's septicæmia of rabbits and the same authority's septicæmia of mice. The pathogenic organisms in both these cases have been cultivated successfully in sterilised media through several generations, and found throughout to preserve their specific properties unimpaired.

In the present essay I attempt no elaborate proof of the proposition that the majority of severe and fatal puerperal fevers are infective diseases—i.e., infective in the same sense as Davaine's septicæmia, due to the introduction and reproduction within the body of pathogenic infective materials. All that we know with

certainty of their ætiology, clinical progress, and pathological processes seems to me to converge irresistibly towards this view of their nature. That the actual infective agents at work are pathogenic microphytes has not yet perhaps been conclusively established. Certain facts and justifiable inferences, however, afford strong support for such an opinion, which is in harmony also with what has been placed beyond doubt in the case of some infective diseases such as erysipelas, and with what is suggested by the analogies furnished by recent researches in experimental pathology. Thus all observers who have specially studied this question agree in having found micrococci, single or united in pairs and chaplets, in the blood, tissues, or inflammatory exudations of puerperal fever patients. Other micro-organisms have also been found, but the micrococci appear to be the most important, both as being those most invariably present and as that variety which experimental studies have associated with pathogenic properties in the greatest number of instances. Experiments made upon animals with blood and pus taken from puerperal fever patients have, it is true, hitherto yielded very uncertain and inconstant results. This fact, however, proves little, since the organisms which act pathogenically upon one animal may be quite or nearly harmless in regard to another, just as is the case with the numerous varieties of tape-worms. Thus, for example, the bacillus which is the infective agent in Koch's septicæmia of house mice is not fatal to field mice; and numerous other instances of the same kind might be given. Fraenkel made cultivations of the micrococci from the peritoneal fluids of puerperal fever patients, and found that the culture fluids might, after several generations, be injected with complete impunity into guinea-pigs, and with inconstant and slight effects into rabbits. He established, however, a marked and suggestive difference between their effects upon these animals.

It has been urged by some that inasmuch as puerperal fevers are marked by various symptoms and lesions, so they are presumably due to different infective agents. They object therefore to assigning as their several contagia micro-organisms, which, to the microscopist, are always the same. Now this eternal sameness complained of might be urged as proving that the constant presence in the blood of such parasites must have some significant relation to the diseases with which they are associated. But, in truth, the mere form of such organisms cannot be accepted as evidence of real identity. We have abundant experience that micro-organisms, morphologi-

cally inseparable, are quite distinct in their habits and pathogenic behaviour. It is highly probable that these micrococci are of different kinds, depending upon the nature of their sources. As sustaining this view the fact is noteworthy that, while in different outbreaks of puerperal fevers the symptoms and lesions vary considerably, in the same outbreak these remain fairly constant, very probably because of the presence throughout of one and the same pathogenic microphyte.

Fehleisen has definitely shown, by culture experiments upon rabbits and men (the latter for the cure of certain tumours), that erysipelas is an infective disease due to infection with a specific pathogenic micrococcus. In the present connexion his experiments are especially interesting, since it has long been clinically recognised that the contagia of erysipelas were capable of originating a very severe and easily transferable form of childbed fever. Virchow also, formerly struck by pathological analogies, had called puerperal fever "malignant internal erysipelas."

Diphtheria is also a disease with which puerperal fever has long been associated in the minds of clinical observers, and, though not yet absolutely proven by culture experiments, it is almost certain that it too is due to infection with a like organism to that found in erysipelas.

Recent researches go far towards proving that septic infection and pyæmic infection are two quite distinct diseases, due to the parasitic invasion of different kinds of micrococci which make for themselves different habitats within the bodies of their hosts.

The exact manner in which pathogenic microphytes entail their varied results does not here specially concern us.

I shall only add that the results of antiseptic midwifery—of special measures taken during and after labour to prevent the access to a puerpera of pathogenic organisms, or to destroy them if present—afford the strongest of all evidences in favour of the views here advocated.

In another paper I shall treat more at length of the relations between clinical experiences of puerperal fevers and the results hitherto obtained by researches in the domain of experimental pathology. These, I think, justify us in concluding that the traumato-infective fevers of childbed are due to inoculation with, and invasion of the body by, different pathogenic micro-organisms. Thus we may class the varieties of these diseases according as they are due to septic infection, pyæmic infection, erysipelalous infec-

tion, or diphtheritic infection—a classification, however, which, it must be remembered, represents what is probably only a passing phase of knowledge. Hereafter we may make a more complete and exact classification; meanwhile we must also bear in mind the possibility of a “mixed infection,” or of an infective and a non-infective cause of disease acting upon the same patient at the same time. The clinical course and pathological lesions of a particular case are difficult to disentangle and explain, exactly in proportion as the causes from which they arise are complex.

I believe that the views enunciated in the foregoing paragraphs represent correctly the general nature and pathological progress of the most serious or infective fevers of childbed. Apart from their bacterial genesis, common experience and consent have placed the fact beyond cavil that these fevers may originate by the introduction into the patient's wounded genital passages of various infective agents, derived from the local secretions of sick puerperæ, from the juices of some cadavers, from sloughing or gangrenous sores, or from foci of erysipelatous, phlegmonous, diphtheritic, or other unhealthy inflammations. The results of such infection will vary according to the state of the patient, the properties of the particular virus, the site of its inoculation, and the routes by which it finds its way into the system. If we consider the various effects of dissecting wounds, the partial or apparently complete immunity enjoyed from their influences by some, and the different degrees of receptivity displayed by the same individual at different times, we shall not feel surprised at the still more numerous varieties of puerperal fevers, even when apparently owning a common source. A succession of cases, whether in private or in a hospital, clearly proves that it is with an infective variety of puerperal fever we have to deal. But it seems erroneous to suppose that non-infective sporadic cases of fever do not occasionally occur, the symptoms of which cannot be distinguished from those of the truly infective variety. Even allowing for the extreme difficulty which must often be experienced in tracing contagia to their source, it is impossible to resist the strength of the evidence that a very serious and fatal puerperal fever may occur without any possibility of infection having been introduced from without, and under external conditions which are in every way healthy. Such a result may follow upon the exceptionally severe traumatism and crushing of a difficult and tedious labour, necessitating subsequent sloughing, or perhaps gangrene. I have no

doubt, from one case which I saw, that such an accident as rupture—unnoticed during labour—may give rise to symptoms in the puerpera which approximate closely to those of a quickly fatal infective puerperal fever. Again, the existence of an acute or gonorrhoeal vaginitis at the time of labour constitutes a condition which has rightly been regarded as a possible source of phlegmonous inflammation during childbed. Retained and decomposing fragments of the placenta, in addition to causing septic poisoning, may excite such unhealthy inflammations of the uterus and its surrounding parts, including suppurative phlebitis and lymphangitis, with resulting metastatic abscesses, as cannot collectively be distinguished from a fever which was truly infective in its origin and progress. Thus the same general results may be reached by routes which, in the present state of our knowledge, appear different; and we are not coerced, or even justified, in assuming the action of a foreign infective agent in all the graver cases of puerperal fever. A certain residuum of cases must remain for other methods of prevention than such as are included in those of the most perfect cleanliness and asepticism. Let us not, however, because of this loophole for escape from the heavy weight of personal responsibility, neglect to exercise the most scrupulous precautions against the death's-head presence of infective materials about the puerperal bed. The large majority of the graver puerperal fevers are infective, and the clear onus of keeping their causes afar off rests with us. The close succession of two deaths only from fever in one man's practice is fearfully suggestive that one at least of them might have been prevented by his absence.

The CONCLUSIONS at which I have arrived may be summarised as follows:—

(1.) There are a variety of puerperal fevers, but no one "puerperal fever" properly so-called.

(2.) Some of the less serious fevers result from local inflammations, combined with some degree of toxæmia.

(3.) Various exanthemata—notably scarlatina—may occur about the period of childbed, and are then manifested in a more or less blurred form, though they can usually be recognised by specific peculiarities. Such fevers are apt to be complicated by endogenous toxæmia, septic poisoning, or septic infection.

(4.) There are two chief types of puerperal toxæmia accompanied by fever—the infective and non-infective.

(5.) The non-infective form is the result of septic poisoning,

and comprehends the greater number of sporadic and, in its uncomplicated form, more remediable cases of puerperal fever.

(6.) The infective form results from heterogenetic infection—septic, erysipelatous, diphtheritic, &c.—and includes the greater number of serious childbed fevers, especially such as assume what is usually known as the “epidemic” type in the practice of hospitals or individuals. The succession of cases is kept up by the actual transfer of the infective contagia (almost certainly consisting of pathogenic bacteria or their spores contained in the unhealthy secretions), by hands, instruments, &c., from one patient to another. The initial case of such a series may be due to the infection of the patient with septic material derived from the juices of some corpses—especially such as are but lately dead of some malignant infective disease—from gangrenous, sloughing, erysipelatous, or diphtheritic wounds, &c.

(7.) There are exceptional cases in which, though the symptoms and progress resemble closely those of the infective fevers, no foreign source of infection can be discovered. Some of these cases may originate in unusually severe traumatism or crushing occurring during labour, followed by sloughing, &c.; others in an intensification of a pre-existing catarrhal or gonorrhœal inflammation of the genital passages; and others, again, in the local and neighbouring inflammatory consequences of the retention within the uterus of decomposing portions of the placenta.

Whether in hospitals or in private, the prevention of puerperal fever in its gravest or infective forms depends upon a thorough knowledge of its sources, and a frank acceptance of personal responsibility for the safety of our patients. This responsibility we cannot and we ought not to shirk. Dr. Macan has, in his Report, specially dealt with the prophylactic measures which he introduced with such signal success into the Rotunda Hospital. To the results obtained it may be objected that they were perhaps fortuitous, and that as good have been recorded in pre-antiseptic periods. But the strength of antisepticism, as applied to midwifery practice in hospitals, does not depend upon an exceptional record; it is based rather upon the cumulative and corroborating evidences of its efficacy wherever tried—in Russian, German, French, American, and English lying-in hospitals. If Dr. Macan's results had been only as good as those of his predecessors, in the light of existing facts I should have blamed his practice rather than his principles. As it is, a fresh and fortunate proof of the value of

antisepticism in midwifery has been given to us. Considering the complex conditions, the many difficulties and dangers which must always attend prophylaxis in great clinical hospitals, we may hope for (if we are precluded from predicting) a like measure of success in every future year.

[To be continued.]

ART. XIX.—*A Specimen of Seventeenth Century Physiology and Medical Jurisprudence; being an Extract from Salmuthus' Commentary on Pancirollus.* Translated by HENRY KING, A.M., M.B., Ex-Sch. T.C.D.; Dep. Surg. Gen., Retired.

[Concluded from page 343.]

“But let us proceed with what remains. Although, then, the same Gellius hath set forth (*lib. 3, c. 16*), that, after the received opinion of all, the human infant is often born in the ninth month; nevertheless, I see great variety of opinions on the question: If a woman, straightway after the death of her first husband, enters into a second marriage, and bears a son in the ninth month, whose son and heir the child should be presumed to be? There are some who think that it should be presumed to be the offspring of the former husband. For, since by our law, marriage within the year of mourning is prohibited, on account of the disturbance of the blood, (*l. liberorum 11, § 1, ff. de his qui not. infam.*, Jacob. Roeverd,* *lib. 1, Varior, cap. 20*), the presumption, say they, more favourable to the son, should be elected—to wit, that he should be held to be born of an authorised marriage—that is, of the first union (*Bald. in l. si matre. C. de suis et legit.*) Which principle, however, would not be conformable with the Canon law, whereby it is permitted to a wife to marry another, even during the year of mourning (*cap. pen. et ult. Extr. de secund. nupt.*) But perhaps the Canon law is not to be made to apply to this case, in which doubtfulness about the offspring may arise, as indeed Alciatus (*lib. 9, parerg., cap. 12*) not improbably argueth: For, although it hath pleased the maintainers of Pontifical law to assert, that even in that case, in which, on account of disturbance of the blood, and uncertainty about paternity, a second marriage, within the year of mourning, is prohibited, the civil laws are overruled by the canon law, on those

* A Belgian jurist, born about 1534, near Bruges, where he died in 1568.

grounds which Goffredus^a has stated in his *Summa de Secundis Nuptiis*. Nevertheless, Lucius de Penna (in *l. Mulieres*. 9, *C. de Incol. et ubi quis domicil. hab. vid. lib.* 10) has confuted that view of the Canonists, by solid proofs and clear, showing that it is not the marriages, but excessive haste in entering into them, which is prohibited by the civil law; which opinion is undoubtedly true.

Opinion 2. “Others have pronounced that offspring of this kind should rather be presumed to be of the second husband, in whose house, to the knowledge of the neighbours, it was born; and, therefore, established in possession, as it were, of that right, or of filiation, as Imola maintained, Lancelottus,^b and others (in *d. l. Gallus in princ.*); since we define a son to be, that which is born of a man and his wife (*l. filium*. 6, *ff. de his qui sunt sui vel alien. jur.*); which conclusion Johannes Baptista Asinius^c (in *Judicior. praxi, parte 2. § 1, cap. 66, et seqq.*) enlargeth, in various ways, and again establisheth. And that conclusion thou mightest, perchance, esteem the truer on this ground—that the paternity should be imputed to the second husband, who was in too great haste to marry a wife; as Ulpianus also (that we may draw a conclusion thus from that circumstance) attributes all the blame to him who, when he might have avoided facing the storm, or the force of the stream, if he had voyaged at an opportune season, wilfully trammelled himself, or, for pleasure’s sake, set sail, no necessity urging (*l. 2, sect. si quis tamen ff. si quis caution. in judic. sist.*); especially, since that hasty hurrying on of the marriage is not free from suspicion; nor seldom doth it happen that the vicarious labour of a strenuous and more assiduous cultivator takes the place of a husband who is an inactive tiller of the uxorial farm. To which alludes that exceeding witty epigram, which, copied from a manuscript of venerable antiquity, Hadrianus Junior (*lib. 5, Animad., cap. 17*) restored to Martialis—prepared to swear that it was Martialis’, or Jove a stone. Thus it runs:—

“Milo domi non est, peregrà at Milone profecto,
Arva vacant, Uxor non minus inde parit.
Cur sit ager sterilis, cur uxor lactitet, edam;
Quo fodiat ager non habet; Uxor habet.”

To conclude, the presumption is that the child belongs to him who longest persevered in the tilling of the field, most specially

^a Of Travo or Trano, a canonist of the thirteenth century. His *Summa super Titulis Decretalium* consists of five books, of which the fourth is devoted to betrothal and marriage.

^b An Italian jurist, 1511–1591.

^c An Italian jurist, who lived in the latter half of the sixteenth century.

if the testamentary benefit suggests the same; as, because the son is passed over in the former husband's will (*arg. l. ex facto, § pen. ad. SC. Trebell.*); or if it be established that the former husband was in such ill health that in all probability he was incapable of intercourse with his wife (*d. l. filium, 6 ff. de his qui sunt sui vel al. jur. Alciat. in d. l. Gallus in prin. n. 31 de lib. & posth. Asinius in praxi Judicior. part. 2 § i. c. 80*).

Opinion 8. “Angelus opines, on account of the uncertainty of the

question, that that offspring should be admitted to inherit from both husbands, as if it were decided to be the child of both, just as sometimes a slave is understood, by a legal fiction, to be the joint property of two masters (*l. duo socii 8, ff. de hæredibus institu.*), although he could belong to one only, inasmuch as joint control and possession by two persons is impossible (*l. si ut certo, 5 §, si duob. vehiculum ff. Commod.*). Since it is contrary to nature that when I possess anything you also should seem to possess it (*l. 3 § ex contrario ff. de acquir. poss.*), on which Arius Pinellus should be consulted (*l. 1, c. de bon. mater. par. 3, nu. 10*). Accordingly Alexander (*d. l. Gallus*) mocketh at that opinion, that that son should be admitted to inherit from both fathers, as a dream, although it is certain that it found favour with Azo, as one supported by great justice (*arg. l. qui duos. 9, ff. de reb. dub.*). And this view appears plausible even to Alciatus in one case, to wit, when that son is in possession of property inherited from both. For the son will be able to take exception to the claim of the relative of the first husband, on the ground that he is his son, and likewise against the relative of the second; since it is lawful for a defendant to take contradictory exceptions in opposition to different Pleadings (*l. nemo. de except.*), and, as Accursius saith, ‘to turn his cloak’ (*in l. Papinianus § sed nec impuberis, ff. de inoff. testam.*); whence it comes to pass that his assertion to the first claimant will do him no injury in respect of the second (*l. si duo patroni. in pr. de jurej.*), as Aretinus (*d. l. Gallus*) pronounced against Abbas (*c. asserte. de præsum.*), and it is true. For the defendant can gain his cause against the one, because that one hath proved nothing; and against the other, because the son himself has shown that he is a son (*Alciat, lib. 9, parerg. et add. ad d. l. Gallus in pr. nu. 37*).

Opinion 4. “But Ruinus and Salomonus* thought that the succession, not to both inheritances but to one or other, should

* A French literary man, 1620–1670, preferred to Corneille for election to the Académie.

be conceded to the child, allowing him a power of choice, so that he should be the son of whichever he might wish; and so, in a matter of doubt, decision should be made on the more favourable side. Nor does this determination seem destitute of reason, inasmuch as the son proving that there had been a marriage between Titius and his mother would show a purpose of choice; but inasmuch as this, along with other proof of the marriage, cannot easily be obscured by the opponent, [?]^a it comes to pass that this view cannot be considered

Opinion 5. sound; nor, in like manner, that opinion of certain ancient authorities, who, on account of the great obscurity of the question, advised that the inheritances should be divided, and half of each given to the son (*arg. l. si paterfamilias de hæc. inst.*).

Opinion 6. “Truer and more generally received, and, moreover, most highly consistent with the rules of Law, is the opinion of Jacobus de Belviso (*l. 1, C. quor. bonor.*), which both Baldus and Angelus followed (*l. liberorum §. 1, de his qui not. infam.*), and Albericus (*l. si vicinus, C. de nupt.*), that, on account of that disturbance of the blood, the son should be considered to belong to neither father, and ought, on the ground of uncertainty, to be excluded from inheriting of either (*l. si ita fuerit. de rebus dub. l. 3, § si duobus de admin. legat.*). For the presumption is the same with regard to either husband, and there can be no victory between equals (*l. cum enim. de stipulat. servor. l. si reus de duobus reis stipul.*), which must, however, be accepted with this qualification, that no inferences press towards either side; and those inferences will especially have to be regarded in those cases which are difficult of proof, among which deserveth to be mentioned proof of filiation, which itself, too, is esteemed difficult and well-nigh impossible (*l. Lucius. ff. de condition. et demonstrat. Bart. in l. 1, C. quor. bonor.*). Either because conjugal cohabitation and the procreation of children are among the most hidden of things, as Augustine discusses at length (*lib. 14, de Civit. Dei, cap. 16, 17, 18, et seqq.*). For who knoweth not (he saith) that sons are begotten—what the wedded do between themselves? since wives are taken with as much solemnity in order that that may be done, and yet, though that be lawful and honourable, it demands a marriage-bed withdrawn from witnesses. For although it be free from sin, yet, at the bidding of modesty, it is not done, save away from witnesses and secretly; nor is any one wont to beget children

^a “Sed quoniam hæc non leviter per adversarium obscurari potest, matrimonii cum alia quoque probatione.”

in the sight of men (unless, perhaps, Diogenes in his cynicism, who, Laertius affirms, used to *plant in the highway*), so that Lactantius (*lib. 3, de falsâ sapient. cap. 15*) and Augustinus (*d. loco. c. 20*) declare that not undeservedly he was called a *Cynic* from his dog-like shamelessness. Or because, even when copulation has been proved or confessed, yet generation or conception has not been thence proved, since scarcely ever can a father be sure about his offspring, as that verse of Menander hath it, thus done into Latin by Marq. Freher:^a—

Cur mater sobolem patre diligit acritus ; hinc est :
Esse suam mater scit, pater esse putat.

Freherus. Far less, then, may an outsider decide with certainty, as lord Freherus has elegantly shown in his most learned treatise, *de Famâ, lib. 2, cap. 6*, in which (*nu. 5, et seqq.*) he most excellently setteth forth the manner of arguing concerning the proof

Inference from possession. of filiation. But among those inferences for proving filiation, that ranks first where the son in question is in possession of property inherited either from the first husband, or from the second, or even from both, as we have lately mentioned ; for possession maketh the presumption to be in favour of the possessor as the son (*arg. § Recuper. andæ. sect. commodum. Instit. de interdict.*) : where the advantage of possession is said to lie in the fact that, even though the property does not belong to him who is in possession, if only the claimant shall not be able to prove that it is his, the possessor holds his ground ; for which cause, since the rights of both parties are obscure, judgment is wont to be given against the claimant, as one who did not succeed in proving

Inference from the features of the father's face. his case (*l. si C. de rei vindicat.*). Another inference is that which is drawn from the father's countenance, so that the son should be judged his whose likeness and lineaments he recalls (*l. quod si nolit. 31, § qui mancipia et ibi gl. ver. non infamatæ. ff. de ædilit. edict*). Which opinion Bartolus and others, but especially Jason, condemn (*l. Gallus in princ. nu. 68, ff. de lib. et posthu.*), and Jacobus Menochius^b (*de Arbit. Judic. cent. 1, casu 89, nu. 98*), arguing that, since offspring may be born shaped by the imagination, it often happens that sons are born unlike the father (*gloss. in l. quæret aliquis, 135, ff. de verb. signif. et l. non sunt liberi 14, de statu hom.*). That it is far from being

^a Marquard Freher, a German historian, 1565–1614. An incomplete list of his works enumerates forty-nine.

^b An Italian jurist, 1532–1607 ; he was Professor of Law at Padua for 23 years.

a fixed law of Nature that children should be produced like their fathers, but that the appearances of mortals are assigned according to the fortuitous lot of conception; and, therefore, that often ill-formed children spring from the handsome, and weakly from the strong (*Valer. Max. lib. 9, cap. 14*), from the learned, stolid, and dull, from fools often the most prudent: as, after Alexander Aphrodisæus, Andreas Tiraquellus* brilliantly teaches (*ll. connub. leg. 15, n. 154*). So, too, it happens that when an adulteress, fearing her husband's approach, thinks constantly of him, she produces children by her paramour so like the reputed father that milk cannot seem more like to milk. To this refers that passage of Horatius—*Nec metuo, ne dum coeo, vir rure recurrat*. That Empedocles also was of opinion that the child derived its form from that which was presented at the time of conception, which Plinius (*lib. 7, cap. 12*) elegantly terms, *haustas imagines sub ipso conceptu*. According to whose opinion also, the imagination of either parent, suddenly fleeting through the mind, is supposed to form or to commingle the similitudes. And on that account there are more varieties in man than in all other animals, inasmuch as the rapidity of his thoughts and the swiftness of his mind and the variety of his disposition imprint characters of many forms; while other animals have unmoving minds, and like in all of each kind. Hence it is well known that women have delighted not unfrequently in images and statues, and have brought forth children resembling them: as may be seen in Joh. Baptista Porta (*libr. 2, Magiæ Naturalis, cap. 19 & 20*), and Franciscus Valesius in his singular book, *De Sacrà Philos., cap. 11*. Nor are examples out of good authors wanting. For both D. Augustinus (*libro 5, contra Julianum*) writes that a certain Cyprian king, being ill-looking enough, had his bed adorned with many beautiful paintings, so that his wife by looking at them might conceive offspring also beautiful; and D. Hieronymus, commenting upon *Genesis*, relates that Hippocrates had left it upon record that a woman who had borne a very beautiful infant, unlike the family either on the father's side or mother's, was discharged from suspicion of adultery because a portrait not dissimilar had been painted in the vicinity of her couch. By which argument Quinctilianus also

* André Tiraqueau, a French lawyer—1480–1558. He was lieutenant-general at the siege of Paris, when the publication of his first work led to an offer (which he declined) of a seat in the Parliament of Bordeaux. As a soldier he had an opportunity of releasing Rabelais from prison, into which he had been thrown by the clergy; in return for which he receives high praise in *Pantagruel*.

defended a matron who had brought forth an Æthiop, since she had a little image of that colour in her chamber. And Jacob's craft is well known, approved also by Augustinus (*lib. 10 de Civitate Dei*), who, in order that he might have a parti-coloured flock, used to place variegated rods in the watering troughs, that such offspring might be generated, as were the rods which the cattle looked on when led to watering (*Genesis 30*). Nor is that unknown which is told in Lucilius of Manilius the painter, who had sons ugly, and in appearance very unlike to himself; for, being asked by Geminus how it happened that he did not fashion children like himself, or of that beauty wherewith he was wont at other times to paint them, is said to have replied that *in the dark he fashioned, and painted in the light*, which Georgius Sabinus expressed in a very elegant epigram:—

“Pignora conjugii deformia pictor habebat,
Uxor in hunc talem protulit ipsa jocum;
Cum tua præstantes manus exprimat semula formas,
Cur secus ac pingis corpora fingis? ait.
Nocte, refert, soleo tenebras fingere; pingo,
Clara nitet Phœbo cum radiante dies.”

“Moreover, on this ground also authors think that probable inference cannot be drawn from that similitude: that it is known that persons born even of different nations are found to be of so concordant form, and some in separated and very distant places to be so like in appearance that neither could be distinguished from the other, but both were taken to be one and the same. For both Toranius sold to M. Antonius the triumvir, as twins, boys of exquisite beauty, one born in Asia, the other beyond the Alps, so close was their resemblance! and a plebeian named Artemon was so like unto Antiochus, King of Syria, that Laodice, the royal consort, after Antiochus had been slain, accomplished by means of him a fraudulent recommendation and succession to the kingdom, as Plinius writes, *lib. 7, cap. 12*: although Valerius Maximus (*lib. 9, cap. 14*) saith that that Artemon was not a plebeian but himself also of royal stock; out of whom those somewhat obscure words of Plinius are elucidated. Therefore, I quote the passage—‘Laodice, wife of Antiochus (saith Valerius), her husband having been slain, in order to conceal the crime, placed Artemon in bed as though he were the king himself unwell; and deceived all the people, admitted to the chamber, through the exact likeness of his speech and features: and men believed that Laodice and her sons were commended to them by the dying Antiochus.’ And, as the same Plinius tells, one Vibius a plebeian, and

*Likeness
between certain,
even uncon-
nected.*

also Publicius a freedman, were like to the Great Pompeius so that in appearance they scarce could be distinguished, presenting that handsome countenance and the majesty of his illustrious brow. Which sport of chance, saith Valerius Maximus, came to him, as it were, by hereditary descent. For his father also was so like in appearance to Menogenes, his cook, that though a man fierce in spirit and powerful exceedingly in arms, he never succeeded in repelling from himself the other's sordid name. So we read that a certain provincial was so like in appearance to Augustus Cæsar that when he was in Rome he drew upon himself the eyes of all men. And so Cæsar is said to have had him brought to him and asked him 'If his mother had ever been in Rome?' He said 'No,' and perceiving the joke, '*My father,*' quoth he, '*often came to Rome.*' So by his jest he avenged his mother's chastity which had been attacked, retorting the suspicion upon Cæsar's mother instead. Let me say nothing of what a certain Martinus in Gallia, within our father's memory, did; who cohabited for five years (if I am not mistaken) with another man's wife, under the appearance of the real husband, every one taking him to be the true husband, on account of the resemblance of his face and his ways: concerning which thing the *Arrestum Tolosanum* is extant, commented on by Joh. Corasius.

“But although these things are sometimes so, yet it cannot be denied that it happens oftener that children resemble
Children resemble their lawful parents. their lawful fathers. For there is no doubt that men follow some genital law, as we see in animals and in plants which produce forms like themselves: so that not without good reason the illustrious Philosopher Favorinus (in Gellius' *Noct. Att. lib. 12, c. 1*) thought that the nature and power of the seed hath very great influence over the moulding of similitudes of mind and body. Hence since likeness, as being more consonant with Nature, mostly prevails, we see that masters of households take every care that their dogs and horses should be bred from the best and most beautiful; Plato, by the way, wondering and laughing (*de Republicâ*) because the same pains be not taken in the connexions of mankind. And Joh. Corasius* (*lib. 2, Miscellanea*,

* Jean Coras was a French lawyer, born in 1513, died in 1572. He was a zealous convert to Protestantism; which led to his expulsion from the Parliament of Toulouse and ultimately to his violent death. One of his works is a Report of the well-known case of Martin Guerre, referred to in the text:—*Arrêt memorable du parlement de Tolose contenant une histoire prodigieuse d'un supposé mari, advenue de notre temps, enrichie de cent et onze belles et doctes annotations*: Paris, 1572.

cap. 21) is of opinion that no evidence of a mother's chastity is more unerring than offspring resembling their parents. Whence Martialis (*lib.* 6, *Epigram.*) Ad Nepotem :—

Est tibi, quæ patrii signatur imagine vultus.
Testis maternæ Nata pudicitiae.

And Catullus in his Epithalamium on Julia and Maullus :—

Sit tuo similis patri
Maullio, et facilè insciis
Noscitur ab omnibus :
Et pudicitiam suæ
Matris indicet ore.

And to the same appears to tend Dido's complaint to Æneas, in Virgilius :—

Saltem si qua mihi de te concepta fuisset
Ante fugam soboles ; si quis mihi parvulus aulæ
Luderet Æneas, qui te tantum ore referret.

Which verses Tiberius Decianus also quotes (*Resp.* 1, *n.* 117, *vol.* 3). Whence it comes to pass that I do not deem it true that those children that are adulterously conceived are especially like the husbands : since it is not likely that the adulteress is thinking of her husband in the very titillation of enjoyment . . . : and Phocylides himself hath happily written :—

Haud similes gignunt stuprata cubilia natos :

wherewith agrees that passage of Theocritus (*Idyll.* 17)—*The thoughts of the wife who hath a lover are ever far away ; And conception indeed is easy, but never are the sons like the father :* and moreover it is also known by experience that the offspring of adultery is like the adulterers. For by this fact we read that the *Pasiphae's adultery.* adultery of Pasiphae was detected because she had borne twins exceeding like, the one to her husband Minos, the other to Taurus his secretary. Hence the fable wherein she was said to have brought forth the Minotaur, a mixed creature (*P. Ærodius, lib.* 8, *ver. judicat. Tit.* 1, *c.* 7).

Proconnesia. So Solinus* (*lib.* 4) has recorded that Proconnesia, a maidservant, was delivered of twins the fruit of double adultery, each resembling its father ; perhaps following Plinius, who had written (*lib.* 7, *Natural. histor., c.* 11) that Proconnesia, from coitus on the same day, had produced one son like her master

* A Latin compiler of the 3rd century, A.D. He left a Compendium of Geography, conveyed, for the most part, from the elder Pliny. His Polyhistor was one of the first books printed.

Duke of Plumbinum. and one like his steward. Nor undeservedly was the Duke of Plumbinum^a esteemed ridiculous, who, believing that his concubine was pregnant by himself, had invited to the christening as many men of rank as he could. But she produced an Æthiop, strongly resembling his cook: with whom he on inquiry found that she had had illicit intercourse: as is told by Alciatus (in *l. quæret aliquis* 135, *de verb. signif. n.* 5); and Michael Piccartius^b in his *Narratio Ridicula*, cap. 11, repeats the story of that absurd birth elegantly and festively. As, then, legitimate children are like legitimate parents, so also the offspring of adultery resembles the adulterers: which Martialis points out in his very elegant epigram upon Cinna (*lib.* 6),^c and which Langius ascribes to Informative power: by help of which out of the seed of both parents and the mother's blood drawn through the acetabula into the womb, embryos are formed, saith he, after the likeness of the parents, and are marked with the moles, scars and brands of their parents, and not rarely with those of ancestors (*lib.* 1, *Epist. Medicin.* 10). For few there are, Hippocrates was wont to say, who do not bring from the womb something hereditary. And although evident signs of descent, as moles, scars, &c., may not be apparent from the beginning, at birth itself, yet as life proceeds we discover indications either in the very look of face and body or in voice, pronunciation, gait, carriage, manners. For every day we recognise family virtues, and vices, diseases, delicacies, as of joints, of bowels, phthisical, gouty. How many besides do we see to have fallen by hereditary apoplexy? How many blear-eyed, purblind, deaf, stammering, like their parents and even their grandsires and great-grandsires? For Euripides in the *Electra* said that likeness of blood is wont to produce many resemblances to the father's body. Hence we have heard (*Plin. li.* 7, *c.* 13) that three of the family of the Lepidi were born, in interrupted succession, with an eye closed by a membrane; and Trogus^d (*lib.* 15) writes that Seleucus, King of Asia, had an anchor on his thigh, and that that figure or natural mark

^a Piombino, province of Pisa, opposite to Elba.

^b Piccart, a German savant of Nuremberg, 1574–1620. He taught, in succession, logic, poetry, and metaphysics at Altdorf.

^c A most amusing epigram, but too long for quotation here.

^d Pompeius, a Latin historian of the Augustan period, quoted with approval by the elder Pliny. He wrote a history, from Ninus to Augustus, in 44 books (only preserved in Justin's abridgement), published in the middle of the second century.

was continued also in his posterity. Whence Ansonius, speaking of Antiochia :—

illa Seleucum

Nuncupat, ingenitis cui præbeat Anchora signum.

so that *the anchor of the Seleucidæ, the ivory shoulder of the Pelopidæ, and the red beard of the Ahenobarbi* passed, as it were, into a proverb from the hereditary marks of those families. Nor indeed is it unfrequent that Nature, as if the image long lay latent, renews the appearance and memory of Ancestors not in sons but in Grandsons. Which Lucretius hath clearly expressed in these verses (*lib. 4*) :—

Fit quoque, ut interdum similes existere avorum
Possint, et referant proavorum sæpe figuras,
Propterea ; quia multimodis primordia multi
Mista, suo celant in corpore sæpe parentes.
Quæ patribus patres tradunt à stirpe profecta.
Inde Venus varia producit sorte figuras,
Majorumque refert vultus, vocesque comasque.

“For unquestionable, saith Plinius, is the instance of Nicæus the Bizantine, who, from a mother the issue of adultery with an Æthiop but differing not in colour from other people, himself reproduced the grand-paternal Æthiop, just what Aristoteles (*lib. 1, de generat. animal. cap. 18*) had before written concerning Helis, who from an Æthiop’s embrace brought forth a daughter, herself indeed white, but of whom she afterwards received an Æthiop Grandson. Which Antonius Mizaldus* (*cent. 2, Memo- To mistrustful rabil. aphoris. 95*) advises mistrustful husbands to note Husbands. carefully : who do not blush to charge their wives with unchastity if ever they produce offspring unlike either parent : whereas it very often happens that children resemble more their great-grand-parents than their parents, as thus far hath been shown by us by many examples.

“Not improbable, therefore, will be the inference which is drawn from likeness of features to prove the provisional possession of the right of sonship : on which a stand may be made until, connexion between the man and woman being presupposed, the contrary hath been proved by the opponent, on whom the onus is thrown : as we read

*How far in-
ference from
similitude may
be relied on.*

* A French astrologer, 1510–78, who flourished in Paris. He gave up medicine for astrology and the curiosities of science. He left very many works ; amongst them *Nouvelle Invention pour incontinent juger du naturel de chacun par la seule inspection du front et de ses lineaments.*

that Antonius did against the crafty dealer Toranius, the fraud being detected by the language of the boys^a (*Plin. d. c. 12, in fin.*). Which will not be difficult to do, even in the case of those who, whether in the same or in different places, closely resemble others in form, if diversity either of origin or of locality be shown by the opponent. Nor truly can I think that the facts which we have cited from Hieronymus, Quinctilianus, and others, should be taken to be of such importance as to be deemed superior to daily experience. For both in those cases in which the image was put forward the point was the removal of suspicion of adultery, against which presumption is generally and readily allowed (*arg. l. meritò. 51, ibi et sanè plerumque ff. pro socio*); and it is certain that a picture presented to the eyes would have more influence than thought of an absent husband: about whose form, by Hercules, it appears to me not very likely that an adulteress would, in the venereal titillation, trouble herself very much. And since those women were acquitted by special pleading in a special place it follows that the general rule as approved by those same authorities is different: to wit, that Nature requires an offspring like the parent, and that likeness proves that it is his as unlikeness that it is not his (*Joh. Baptista Asinius in praxi Judicior, sect. 1, cap. 14, circa fin.*) But for what reason offspring resembles more either father or mother is learnedly treated of by Franciscus Vallesius (*Controv. Medicar. et Philosoph. lib. 2, cap. 7, circa fin.*): and how males or females may be begotten Joh. Baptista Porta^b has laid down (*lib. 2, Magicæ Naturalis, cap. 21*): to whom add what Joh. Langius has left on record (*Epist. Medic., lib. 2, ep. 7*), teaching the reason why old men generally beget males, but young men females.

^a Toranius sold the boys as twins. When Antony found that they spoke different languages he was "furens" and abusive. The dealer explained that the wonder was greater in that they were *not* twins, and that he had charged accordingly:—*ob id ipsum se tanti vendidisse quoniam non esset mira similitudo in ullis eodem utero editis*; that such a wonder was *super omnem taxationem*. Then Antony began to think that he had made a good bargain.

^b Giambattista Porta, a celebrated Neapolitan physician, 1540–1615. He devoted himself to the study of Nature, and did more than any other man of his day to spread a love of the natural sciences. He invented the camera obscura, and demonstrated "that we see objects not by rays emanating from the eye, but by the light which penetrates the organ from without." His optical experiments were especially remarkable. He paid great attention to physiognomy, and almost founded the science: studying not human features only, but also those of the lower animals in comparison. Towards the end of his life he wrote seventeen plays.

3. *Inference from the name of Son.* “The third inference is drawn from treatment and appellation, that is, when the offspring is not only called son but also is treated as a son; while food and other necessities of life are supplied to him as to our children: on which subject, however, let the same Johan. Baptista Asinius be consulted (*d. sect. 1, capito 16, cum multis seqq.*), and Jacobus Menochius (*de Arbitrar. Judic., lib 2, centur. 1, casu 89, num. 77*).

4. *Inference from Report.* “The fourth inference is taken from Report, which hath this effect that the issue which hath been esteemed a son in the common report of the people is established in presumptive possession of the rights of sonship. For, although there are not wanting those who deem that in this case report hath little value, so far that Report is called ‘the vain voice of the people’ (*l. Decurionum C. de pæno*), and ‘false rumour’ (*l. ult. ff. de hæred. inst.*), as Quintilianus also calls Report ‘a rumour without certain author’ (*lib. 5 Orator. Institut., cap. 3*): since Report (that I may speak with Tertullianus, in his *Apolog. ca. 7*), not even when she asserts anything true, is free from the taint of falsehood. Whence Ovidius (*lib. 3, Metam.*):

*Fama loquax, quæ veris addere falsæ
Gaudeat, et minimo sua per mendacia crescit.*

Yet, since the matter is to be determined by inferences, Report will not in this case be esteemed as the worthless voice of the people; nay, that voice of the people is wont to be called the voice of God. For, as saith Hesiodus:—*Report which the people's frequent talk repeats ne'er altogether vainly perisheth; since she too is divine*; so much so that, when Report is duly tested, it may be said that the truth concerning a matter is established: inasmuch as in such cases as are difficult of proof and chiefly dependent on Inferences (to which class belongs Filiation), and of which proof cannot be obtained in any other way, Report is pronounced to afford ample proof by the common opinion of the authorities; which opinion Jac. Menochius and Joh. Baptista Asinius praise and follow, in the passages lately quoted, and which (best of all) Marquardus Freherus sets forth (*lib. 2, de Famâ, cap. 6*). And let so much have been said concerning Nine-months' offspring and the common question about it which hath been everywhere discussed by the Masters.

10. *Ten months' offspring.* “But concerning the tenth month it is unquestionable that the Ancients believed that this delivery was

more frequent than any other. Thence that passage in Virgilius (*Ecloga* 4):—

Matri longa decem tulerunt fastidia menses.

And Ovidius, explaining the division of the year by Romulus into ten months:—

*Quod satis est, utero matris dum prodeat infans
Hoc anno statuit temporis esse satis.*

So also Wisdom thus declareth concerning the time of human birth (*Sapientia* 7): ‘I was compacted in the space of ten months.’ Hence in the Aquilian formula, as given by Scævola:^a ‘If my son shall die in my lifetime, then if any grandson or granddaughter shall be born to me of him after my death, within the ten months next after my son’s death . . . let him or her be heir (*l. Gallus in prin. de liber et posth.*). And in the law of Justinianus: ‘If a son or daughter should be born within the space of ten months after my death let it be heir (*l. ult. C. de posth. hæred.*). And on this matter there is an elegant passage in M. Varro, in the Satire which is inscribed *Testamentum*: ‘If any one or more sons shall be born to me within ten months of my death, if they shall be *ὄνοι λύρας*, let them be disinherited: but if any be born in the eleventh month *κατ’ Ἀριστοτέλην*, Accius hath, so far as I am concerned, the same rights as Titius.’^b Which passage teacheth, among other things, this also, that posthumous sons themselves, too, without any fault at all of their own, could be disinherited; for what fault can there be in sluggishness of nature? What then? if a daughter-in-law should bear two days only after the fulfilment of the tenth month from the son’s decease? Would this child be recognised at all by the grandfather? Our law will not recognise it. For where a fixed time or a fixed day hath been laid down by a testator himself, what happens beyond that day is excluded from the

^a Cicero’s master, consul with Crassus, B.C. 96. Cicero calls him “the greatest orator of lawyers and the greatest lawyer of orators.” He published several works, one of which—*Definitiones*—is the oldest from which quotations are made in the *Digest*.

^b This very obscure passage is taken verbatim from Gellius, who quotes Varro. “*Ονοι λύρας*, “asses at the lyre,” was a proverbial expression for “fools,” and according to some, ten months’ children were “*inepti et obtusi ingenii*.” “Accius” and “Titius” are technical representative names, like “John Doe” and “Richard Roe”: children born either in the tenth or the eleventh month after testator’s death were to be disinherited. The whole passage is thus interpreted:—“If children are born in the tenth month let them be disinherited, as being fools, and I can deny that they are mine: if in the eleventh, because they are clearly not mine, although Aristotle supposed that children might be born in the eleventh month.”

testator's intention (*l. si ita quis. 21, de vulg. et pup. substit.*). Whence Ulpianus: A son born after ten months from the father's death is not admitted to lawful inheritance (*l. intestato. 3 sect. post mortem, de suis et legitimo hæred.*) And Gellius states that the Decemviri had written that the man is born in the tenth not the eleventh month. For that ten months, not begun but completed, is the utmost limit of the gestation of man (*libro 3 Noct. Atticar. cap. 16*). And we see that Plautus also says the same in the *Cistellaria*:—

— tum illa quam compresserat,
Decimo post mense exacto hic peperit filium.

Wherefore, when a certain woman had borne a son in the eleventh month after her husband's death, and sought that the property of the deceased husband should be assigned to the son as to the lawful heir, Justinianus pronounced against the child: since he deemed it beyond doubt impossible that a woman should continue pregnant eleven months; for which reason he ordained by law that whosoever should bring forth at that period should suffer the penalties which by ancient law used to be inflicted on one who had married during the year of mourning.* (*Auth. de Rest. et ea quæ parit. sect. ult.*). Which Alciatus (*lib. 3, paradox. cap. 7*) esteemeth to be unjustly laid down, and with extreme harshness, since Aristoteles and Diocles of the Greeks, M. Varro of the Latins, deemed that children might be carried to this period. But, to tell the truth, no controversy is raised in these cases about the child, but only about the restitution of the ante-nuptial donations. For when it was asserted that a woman had been delivered after the completion of the eleventh month, but within the year, no question was raised Whether after ten months that issue, born in the eleventh or twelfth month, was legitimate or not, but children demanded restoration of ante-nuptial settlement, of which, they asserted, she should be deprived who had hurried into a second marriage within the year of mourning for her deceased husband, their father. The wife, to shatter this contention of the claimants, confessed, indeed, that according to the Constitutions the law was, that a Woman marrying within the period of mourning forfeits her settlement; but denied absolutely that she had contracted a second marriage:

* A woman was required by usage not to marry again within the year of mourning for her husband, on pain of technical *infamia*: which also attached to the second husband if he was a *paterfamilias*, to his father if he was not.

That she had brought forth the child to which she had given birth not by a second husband, none of which she had, but by the force of natural desire, that is, from unlawful intercourse or seduction: And, therefore, that those Constitutions aforesaid did not apply to her, who had not married a second husband. The woman, accordingly, did not allege that the issue was of the former marriage, or that lawful offspring could sometimes be produced in the eleventh or twelfth month; but confessed that after her deceased husband's death she had been debauched, in order that she might escape the penalty due to women marrying within the year of mourning. But Justinianus, deeming it unjust that licentiousness should be in a better position than chastity, decreed, That she should undergo all those penalties just as if it had happened that she had married lawfully before the expiration of the time of mourning: without any reference at all to that point, to wit, how long a woman could continue pregnant. By which decision Justinianus testifies that he did not desire to prejudice at all the children of the former marriage to whom, as well as to this later offspring, if he wished to claim that he was the issue of the deceased husband, no prejudice ought to arise from this ruling, as likewise none from the mother's confession. And I think that this is the true interpretation of that ruling, which, in opposition to Alciatus, Joh. Basius^a pursues at length, (*lib. 4 paradoxar. disputat. cap. 6*). Indeed when a certain woman, who had brought forth in the eleventh month after her husband's death, was charged with having given birth to an illegitimate offspring, but was said to be in other respects of good and well-approved conduct and of unquestionable chastity, the Divine Hadrianus, having inquired into the case and sought out the opinions of ancient Poets, Philosophers and Physicians, (of whom Homerus, Aristoteles, M. Varro were the chief), decreed That a child could be born in the eleventh month: and in the decree itself he added a statement showing on what inquisition, what diligence and what references he had based his judgment; that he might not seem to have brought into practice rashly anything opposed to the Laws of the Twelve Tables (in which it was affirmed that man was born in *Ten* months not in the *Eleventh*), and contrary to the common weal: clearly proving that he had referred the question to Physicians and had decided according

^a Basi, an Italian physician who was born at Padua and flourished in the beginning of the 16th century. One of his works was *Florida corona, quæ ad sanitatis hominum conservationem ac longævam vitam perducendam sunt pernecessaria, continens*.

to their opinion, and, moreover, not without the example of most eminent men. For even Plato, when there was an inquiry concerning the measurement of the coffer referred to Euclides, and Q. Scævola Augur when he was consulted concerning the law of mortgage, being a most learned lawyer, sometimes referred those who consulted him to Furius and Casellius holders of mortgages: and Cicero used to consult M. Tugio rather than C. Aquilius concerning his water-supply at Tusculum; because assiduous practice devoted to one subject is often superior both to talent and to art. By which conduct (saith Valerius Maximus), the Ancients rather showed their own moderation than lessened their authority.

“Nay, even to the twelfth month Gellius teacheth that the pregnancy of women may be prolonged, from those verses of Homer in which Neptunus thus addresses a girl recently embraced by him:—*Now, beloved, rejoice: but when the year shall have rolled away, illustrious sons (for never fruitless are the couches of the Gods), shalt thou bring forth.* In which passage, however, Favorinus warns us that those words *περιπλομένου ἐνιαυτοῦ*, *the rolling year*, are to be understood to mean not the completed, but the nearly completed year: using a word which describes things which have not advanced and been brought to an end but very near to an end. More than this, we read in Plinius (*lib. 7, cap. 5.*) Lucius Papirius being prætor, when an heir in remainder claimed by law, gave possession of the property against his claim, since the mother affirmed that she had brought forth a child after thirteen months: inasmuch as it appeared to him that there is no determined period. And that Gellius also reports in the passage cited above. For Nature is a law to herself and is not conformable to human laws, nor doth she always answer to rule; at one time she hastens, at another she outruns our wishes, at another she is slow and lingers, as Seneca saith from Papyrius Fabianus.* For, as the fruit of trees may be stayed and checked by unduly prolonged cold, so may the foetus by very bitter grief for the departed husband. Hence it is that amongst the Parisians, by the decision of the most learned Advocates, a Widow was admitted to possession of property who had brought forth in the fourteenth month: on the ground that she had lived constantly with the heirs of the deceased, diligently

* A Roman orator and philosopher of the first century, who studied the physical sciences also. Pliny quotes his *De Animalibus* and his *Causarum naturalium Libri*.

watched, and never departing from the company of their wives; the heirs themselves, moreover, making no imputation upon her honour and chastity, nay, rather, bearing witness to her habitual and unceasing mourning for her husband's death. Such being the case, they thought that the opinion as to ordinary child-bearing should not be deemed of so great weight that a most honourable matron, against whom there was no imputation beyond the common habit, should not be believed in her account of her pregnancy (Dion. Gothfredus^a *ad Novell.* 39, *in fin.*). What! when Nicolaus Massa,^b a most Illustrious Italian physician (*Ep.* 29, *tom.* 2), is an eye-witness of the fact that at Venice a Woman of *sixty* conceived by an old man of *seventy* and brought forth a girl in the fifteenth month, without eyes or hands, however, and which lived for five months only. Nay, even the *great* president of the Court of Rhodomagus

Fifteen months' offspring. commanded it to be entered on the public records that a woman, when she essayed to bring forth in the ninth month and could not, in the eighteenth month produced a living child, in the belief of midwives and physicians, as Joh. Bodinus testifieth (*lib.* 3, *Theatri naturæ fol. mihi* 391). But these cases ought not be readily drawn into a precedent: and the character of the woman, as of undoubted or suspected chastity, combined with common report and the administration of an oath, helps much in these physiological matters; as Pet. Ærodius hath weightily laid down (*lib.* 2, *Rer. judicat. Tit.* 4, *cap.* 5). Whosoever desires to know more concerning the various and diverse periods of human gestation let him read especially Hippocrates (*lib. de alimen. & lib.* 6, *de naturâ puer.*), Franciscus Vallesius (*controvers. Medic. & Philosophicar, lib.* 2, *cap.* 6, 8, 9, 10), Andreas Laurentius (*histor. Anatom. cap.* 16, *q.* 37 & 38), Forestus^c (*de mulierum morbis. lib.* 28, *observat.*

^a Denis Godefroy, a celebrated French jurist, born in Paris, 1549; died at Strassburg, 1621. He was a great populariser of law; and his *Corpus Juris* with its notes was a text-book for more than a century. When he met with contradictory authoritative rulings, instead of attempting to reconcile them (as an English lawyer would have done), he wrote "no" after the one he disapproved: and these "no's" ("immo's") of his were collected and published.

^b An Italian anatomist who died at Venice, his birthplace, in 1569. He made several important anatomical discoveries, and wrote a treatise on Syphilis, in which he recommends mercurial frictions and fumigations. He described the Cæsarean section fifty years before it was introduced into France. He translated a Life of Avicenna into Latin.

^c Van Foreest, a Dutch physician. Summoned to Delft during a formidable pestilence, he did such good service that he was retained there on a handsome allowance. He left *Observationum et Curationum medicinalium, Libri XXVIII.*—of no special value.

59, & lib. 28, *observat.* 70), Johannes Langius (*Epist. Medicinal. lib. 2, Ep. 39*), Joh. Schenkius^a (*tom. 2, observat. Medicinal. lib. 4, observat. 122, 125, cum multis seqq.*), Joh. Matthæus (*in enodatione difficil. quæstion. Medicar. q. 88*), Thomas Freigius^b (*quæst. Physic. lib. 36, pag. 1260*), and finally, Lemnius^c (*de occul. naturæ miracul. Paulus Wagner. lib. 4, c. 22, 23*). Which passages the most Illustrious Wagner^d of Amberga hath noted for me, who not long since became a physician, and now practises that art at Solisbachium with honor. Whom, on account of his extraordinary erudition combined with benevolence, and for his remarkable candour of disposition I am wont to rank amongst the most eminent and to venerate.

Multiplicity of offspring. “Next to the time of delivery is the multiplicity of offspring: which Empedocles attributed to the quantity, Asclepiades to the excellence, of the semen, Erasistratus to superfœtation; as may be seen in Plutarchus on the opinions of Philosophers. Seneca, in his *Quæstiones Naturales* appears to place it amongst those things of which no explanation can be given; as why Nile water should make women more prolific, so as to relax unto conception the viscera of certain women which had been shut up in protracted sterility. Galenus thought that the Nile at least aids in a remarkable degree the parturition of women, because when the inundation is retiring, little animals^e are found alive in part of their bodies by the incomplete work of the generating water and earth, the most recent part of the form being still earthen (Plinius, *lib. 9, cap. 58*). Arguing from which the Ægyptians were wont to boast that the earliest men had concreted spon-

^a A German physician, 1531–98. He practised at Frieberg. He collected all the rare cases he could find, from the time of Hippocrates to his own, compiling *Observationum medicarum rararum, novarum, admirabilium et monstrosarum, volumen tomis septem de toto homine institutum*. The seven books are—*de Capite, de Thorace, de Partibus Naturalibus, de Partibus Naturalibus utriusque sexus, de Partibus Externis, de Febribus, de Morbis Epidemicis et Contagiosis, de Venereis*.

^b Freige, a German jurist of Frieberg, who died in 1588. He adopted Ramus' system of philosophy, and one of his many works is a *Life of his master*.

^c Lemmens, a Dutch philosopher, 1505–1568. He practised medicine for forty years at Zierikzee, in Zeeland. He left works on astrology, wonders of Nature, &c., and death interrupted his *Descriptio Algæ, &c.*, and *Compendium de Piscium trivialium nomenclaturis*.

^d A German jurist, born at Leipsic in 1617, died in 1697. He left several dissertations and a book of devotions: but his most important works were his two sons, Christian and Godfrey.

^e Pliny (whose own words are here transcribed) calls them “musculi,” which can scarcely mean “little mice,” and yet is not, I believe, ever used to mean small fishes, such as these animals must be supposed to have been.

taneously in their country, as Diodorus Siculus testifies (*lib.* 1), and Joh. Gryphander^a (*de Insulis, cap.* 18, *n.* 60 & 61). And indeed Avicenna^b writes that incomparable virtue is bestowed upon that river from four causes; first of which he lays down to be the length of its course, the second he ascribes to the splendour and excellence of the Region through which its waters glide down; the third, that they flow from south to north; lastly, the measureless mass of the stream assists. Aristoteles, after calling Nilus most prolific and remarkable for its nutrient virtue, attributes these

*Fertility of
the Nile.*

properties to temperate heating by the sun. Accordingly Poets have called the Nile, since it blesses with wondrous productiveness the whole of Ægypt by its fertilising overflow (or as I may say with Virgilius, 4 *Georgic*, v. 287:—

— viridem Ægyptum nigrâ fecundat arenâ,

concerning the interpretation of which passage, without doubt very obscure, let Joh. Ludovicus de la Corde in his *Commentary on the Georgics* be consulted). at one time *fertile*, at another *rich*, again *productive to drink*. Nay, Athenæus writes it was worshipped by the Ægyptians in Jove's stead; because circumfused as if with rain-showers about its banks at a fixed time of the year, in which

Fertilis æstivâ Nilus abundat aquâ,

it brings to the fields wondrous fruitfulness, as I have said. Of which Tibullus thus sings:—

Te propter, nullos tellus tua postulat imbres
Arida nec pluvio supplicat herba Jovi.

*Shower-
bearing
Nile.*

Hence Martialis aptly and very elegantly calls Nile Shower-bearing (*lib.* 1, *Ep.* 62), not because it caused showers, since the opinions of all agree that showers do not fall in Ægypt, or rarely and in winter only; but because Nilus is become to the Ægyptians even as heavenly showers and rains, since it fertilises every year the whole of Ægypt by its inundation. Whose water even Babylonian Kings had been wont

^a A German jurist and historian, who died in 1652. His tractate *De Insulis* discusses all questions concerning seas and rivers.

^b Ibn-Sina, the celebrated Arabian physician, lived A.D. 980–1037. He was the author of more than one hundred works, most of them very short. The principal is the *Book of the Canon of Medicine*, printed in Arabic, which was translated into Hebrew and often into Latin. It contained five books on anatomy and physiology, materia medica, diseases, fevers, remedies, and antidotes. Many of his tracts have never been published. One of the treasures of the Bibliothèque Nationale is a manuscript which belonged to Avicenna himself.

to store among their treasures, as if to display this proof of their own greatness, since it had been fetched to them through so many wide-extending lands, and so many trackless regions. The Ægyptians themselves, indeed, so highly esteemed this water amongst Royal gifts that king Philadelphus sent it as a present into Syria from Ægypt to his daughter Berenice, who had married Antiochus (Joh. Langius, *Epist. Medicinal.*, lib. 1, epist. 31); and moreover so exceedingly honoured it that when the vessel containing it was being borne to the temple all fell prostrate and with uplifted hands gave thanks to the Gods (Alexander ab Alexandro,^a lib. 4, *Genialium dierum* c. 17); and forbade, with the most religious scruples, their own Apis, cherished with so much care and worship, to drink of the Nile: since they deemed both leanness and slenderness, free from all weight, more suited to god-head; whilst it had been found, on the contrary, that animals which drank of the Nile became fatter and more obese; as Joh. Pierius^b noted out of Plutarchus (lib. 46, *Hieroglyph. Tit. de tribo urnis*).

*The sweetness
of Nile.*

What? that besides that fecundity Nilus is said also to abound in so much sweetness (for no river hath a sweeter taste, saith Seneca, lib. 4, *Naturales quæstiones* c. 2, *in fine*) that the inhabitants scarce ask for wine? Accordingly, Pescennius, acclaimed Cæsar by the Syrian army, is reported to have said to the soldiers guarding the frontiers of Egypt, when they demanded wine, *Ye have the Nile, and do ye ask for wine?* as Scaligerus (*adversus Cardanum Exercitat* 48) relates from Spartianus.

*How many
may be born
together?*

“But concerning multiplicity of offspring, Paulus saith that many things have been handed down so various and incredible that they should be considered fabulous. For Gellius writes that four girls were born together of a matron (*l. antiqui. 3, ff. si pars hæredit. petat*), and that in the

^a Alessandro Alessandro, a Neapolitan lawyer, 1461–1523. After practising for some years he left the bar, disgusted (he said) by the iniquity of the courts, returned to Rome and devoted himself to literature. His chief work was the *Dies Geniales*, but he wrote four curious Dissertations on dreams, apparitions, haunted houses, &c., &c., afterwards incorporated in the larger work.

^b Giampietro Valeriano, called Pierius by one of his teachers on account of his literary tastes, was a learned Italian, 1477–1558. He became tutor to the two nephews of Leo X., and after their violent death retired to Padua to devote himself to letters. His most celebrated work is *Contarenius, seu de Litteratorum infelicitate*: his most voluminous *Hieroglyphica* in 58 books, a *pot pourri* of natural history, physical science, &c., &c., throwing no light on hieroglyphics. He wrote also *De fulminum significatione*, and *Pro sacerdotum barbis defensio*.

reign of the Divine Augustus a slave of Cæsar's in the Laurentine land had produced five boys at one birth; and Ulpianus testifies (*in loco si pater. 36. sect. nam et Aristoteles, ff. de solut.*), and Cajus^a (*in loco utrum 7, de rebus dubiis*), that there was at Rome a woman of Alexandria who in like manner had brought forth at once five, and had them alive at that time. Whom Simon Majolus^b remarkably confirmeth (*dier. canic., part 1, colloq. 3, pag. 45–96, et seqq.*), and Joh. Schenkus (*tomo 2, observ. Medicin. lib. 4, observ. 162*); who record with undoubting faith as many instances as possible of wonderful fecundity and of multiple births. Which we wish to spare the kindly reader. And although Aristoteles affirmed that to be the limit of manifold production in man, and that more were never known to be born at one time; that this number, too, was exceeding rare, as is reported by Gellius (*d. li. 10, c. 2*), yet Paulus writes that authors of no light authority had recorded that a certain woman of the Peloponesus had five times borne four at a birth, that many women of Ægypt had produced seven (*d. l. antiqui 3, ff. si pars hæredit. petat.*), which Trogus thought happened on account of the fertilising draughts of Nile. But Lælius also writes that he had seen in the Palace a free woman, who had been brought the whole way from Alexandria that she might be shown to Hadrianus, with five children, of which she was said to have produced four at one time, and the fifth forty days afterwards (*d. l. antiqui*); on which passage Paulus not obscurely admits that there was, besides a multiple birth, also *Superfætation* (for so *Superfætation.* the secondary conception by a pregnant female is termed, which the vulgar call *Superimpregnation*); which Plinius also (*lib. 7, cap. 11*) lays down when he writes that a certain woman having brought forth a seven months' child bore twins in following months. Of which superfætation different authors have handed down different explanations; since Andreas Laurentius, in his most splendid anatomical work (*cap. 12, quæst. 32*), where he had very learnedly discussed the nature and manner of superfætation, assigns a double cause. First, he refers it to the position and *Its cause.* conformation of the womb. For the womb of brutes when pregnant is much enlarged, hangs down almost completely,

^a Caius or Gaius, a celebrated Roman jurist of the second century. His chief work is *Libri Institutionum Quatuor*, which was the model for Justinian's Institutes.

^b Majoli, an Italian canonist, who died at the end of the 16th century. His best known work was the *Dies Caniculares, hoc est, colloquia XXIII. physica*: which was published in 1600, and in French translation in 1610; and which was considered an authority in the seventeenth century.

and approximates closely to the external orifice. Thus it doth not receive the long pudendum of the male without shock and blow: from the blow comes pain, from the pain avoidance of coitus. The Woman's uterus lieth deeper, and is not pendulous. Therefore it bears more easily the embrace of the male. But a second reason why superfœtation should occur more frequently in the Woman than in the brutes he thus expounds:—because nature has implanted in man enticements of pleasure and desire for coition not only for the propagation of the race but also to soften the miseries of human life: and so woman is wont to be the subject of superfœtation oftener than other animals, since a pregnant woman oftener desires the embrace of the male. Indeed Johan. Bodinus in his *Methodus historica* (*cap. 5 et libro 5, de Republicâ, cap. 1*) ascribes it to abundance of black and especially of acrid bile; which, because it is frothy, is wont to excite lust; for that hence Venus is feigned to have been born of the sea-foam, to which that passage of Ausonius alludes:—

Orta salo, suscepta salo, patre edita cœlo

Æneadum genitrix hic habito alma Venus.

Hence also the Greeks call the Wanton *ὕγρως*, that is, humid, because, *say they*, desire of coition arises from a moist constitution (Lud. Cœl. Rhodig., *lib. 14, lect. antiq., c. 4*). And that very thing he thinks that Aristoteles perceived in his *Problemata*, where he is inquiring into the reasons of the fact that those who suffer from black bile are more salacious than others: which can be seen in the case of the Hare, which of all living things most abounds in melancholic humour. For it is a most libidinous animal, and exceedingly given to venery. For the female, while she is suckling the young which she hath brought forth, often superfœtates, and never hath any interval free from parturition. But the male, besides that he procreates after the manner of males, himself also conceives and expels a foetus and rears it up after the same manner as the female. On which Archelaus writes that Nature was kind, who endowed with fecundity only harmless animals and born for food: to which also she had given both sexual faculties, and that they should all be both male and female and should bear without a male. Aristoteles, however, absolutely denies this, and recognises in them male and female distinct; but because the female oftentimes mounts upon the male, it hath come to pass, he says, that persons ignorant of the facts believed that they were mutually impregnated by coition: but by the laws of nature it could not at all happen that a male should

conceive without a womb or a female without the semen of a male. Whence it is understood that certain of them are hermaphrodites, yet not all. And that have we learned, saith *Tharus* in *Bodinus*, when we were in doubt concerning that matter, from a well-skilled hunter. For he assured us that some were hermaphrodites, but not endowed with the fertility of females; that the male, moreover, never became pregnant, still less the subject of superfœtation: which passage Philippus Camerarius^a cites (*cent. 2, oper. succisiv. c. 99*). But Philostratus, Plutarchus, and many others have supported Archelaus—men whom, since they lived long after Aristoteles, and were not unaware of what he had handed down, it is impossible to suppose to have rashly ventured to assert a fact so open to the observation of all: which is the highly probable reasoning of Johannes Pierius (*lib. 13, Hieroglyph. Titulo de Lepore*). Nay, I find that this property is common to certain other animals with the Hare. For the Ægyptians especially, and, following them, very many others, have related that the Hyæna is of both sexes, and that it is male and female in alternate years. But though Aristoteles affirms that this also is an error; and that the vulgar belief that Hyænas annually change their sex arose from the fact that some of them when caught while still of tender age (and very rarely are they caught, especially the females) were wanting of the genitals; for the males fear exceedingly rivals in love, and therefore closely guard the pregnant females and castrate by biting their male offspring when they get an opportunity: nevertheless I see that authors, as well ancient as more recent, differ from this view of Aristoteles, and amongst these Ælianus,^b a most careful writer of history of this kind: who saith that whoever shall have inspected a male hyæna will by and by see the same to be a female; and if now it be a female afterwards he shall behold a male. Promiscuously indeed they copulate one with the other, acting both as males and as females, alternating their sexes each year. Which author, since he was long posterior to Aristoteles, would by no means have dared to commit that statement to writing unless he had either ascertained it himself or had the evidence of trustworthy persons. To whose authority is added that, by no means despicable, of Septimus Florens Tertullianus, a

^a A German jurist, 1537–1624. He wrote *Horæ Subsicivæ*, which has been translated into English and French.

^b An Italian historian of the second century, quoted with approval by Galen. He taught rhetoric at Rome under the Antonines. He left various historical works, and a *History of Animals*.

man in all antiquity the most learned, but rather rugged in style (for so Hadrianus Junius^a calls him) (*lib. 5, Animadversor., cap. 10*), at a time when the Empire and the elegance of Roman diction were together tottering to their fall. In his book you may find it thus written: If you observe the Hyæna, its sex lasts a year; it is alternately male and female. Yet they appear to err even more gravely than Aristoteles who suspect that that animal is imaginary, as if it were unknown to our world; although so many most weighty authors have with the utmost diligence discoursed of it abundantly; describing many things which, unless they had been known to them as actually seen, I do not think that they would have taken so much trouble about, were the matter groundless and false. And, to go no further, Johannes Langius writes

*The deer
alternates
its sex.* that even in the womb of a horned stag (an animal surely well-known to all), which the Most Illustrious Prince Otto-Henricus, Count Palatine, had caught near Oelwangh, when it was disembowelled, was found a fawn enwrapped in membranes. And indeed he infers that certain Deer change their sex, from the fact that it hath been observed that Hinds sometimes carry horns, which are the masculine weapons of Stags: such an one being captured at Marchium a certain Badensian sent its horns a present to the King of the Galli, which may still be seen at Ambasis in the royal garden, affixed to the wall near the inner gate, with the witnesses who had been present at the chase subscribed on a tablet (*Joh. Langius, Epist. Medicinal., lib. 1, cap. 70*). But no one, I opine, shall have proved mutation of sex from that bearing of Horns. For although it is not incongruous that some hinds should have horns, such as the commentator on Pindarus also noted were occasionally found, and such as was that hind, too, which suckled Telephus, the son of Hercules, exposed in the woods by his grandsire's command: like as they fabled that *Pelias* was reared by a mare, *Paris* by a she-bear, *Ægysthus* by a she-goat, *Romulus* and *Remus* by a she-wolf, *Alexander the Great* and *Augustus* by a dragon, or a serpent, according to those verses of Sidonius (*carm. 2*):

Magnus Alexander nec non Augustus habentur
Concepti serpente Deo :

^a Hadrian de Jonghe—the Young—born at Horn, in 1512. He practised medicine at Haarlem until 1556, when he was taken to Copenhagen by the King of Denmark. Finding the Danish climate too severe, he returned to Haarlem. His library was plun-

that they, who should afterwards be rescued from so grave perils, should appear to have been saved not by chance or good fortune but by the majesty and care of the Gods (Alexander ab Alexandro, *lib. 2, Genial. dier.*, c. 31, and Cælius Rhodiginensis, *lib. 21, c. 37*). Nevertheless, I should not more easily believe that those horn-bearing hinds, along with that usurpation of Horns, both alternate their sex and change their nature, now to male, now again to female, than that female Elephants in Æthiopia and Lybia assume the nature of males and vary in sex because they, no less than the males, have teeth, while in India the females of this genus are seen to be without teeth, as Amyntianus observed (quoted by Joh. Pierius, *lib. 7, Hierogly. tit. de Cervo*). What? when two puppies of that breed, which the Greeks call *ἰχνεύοντες*, drew, by dint of frequent suction, milk from the teats of a bigger dog, so that he afterwards, not without great wonderment, performed, in a mother's stead, the task of rearing? a fact which will seem to thee less unusual and wonderful if you shall understand that a he-goat has sometimes so filled the pails that colostrum was made from the contents. Which fact went so far beyond the belief and opinion of the ancients that the proverb *as if he should milk a buck-goat* (which the Greeks render *τράγον ἀμέλγειν*), was applied to persons venturing and attempting vain and unpracticable things. And *Demonardes* the Philosopher, when he saw two Sophists contending together, the one propounding absurd and ridiculous questions, the other replying in unmannerly *ἀπροσδιόνοσα*,^a do you not, *quoth he*, appear to yourselves to be, the one milking a buck-goat, the other holding a sieve below? Which, however, is established by fact and record, and *Aristoteles* hath handed it down to posterity in these words, thus translated: In most cases milk is not produced by males, either of beasts or human. Yet it may happen that occasionally it may be produced by some. For in the island of Lemnos a he-goat had so much milk drawn from two teats which he had beside the genital organ that colostrum was made from it, which same thing we heard occurred in the male offspring of that goat. But these things they deem to be accounted rather as prodigies. For the God answered to that Lemnian, the

dered during the siege of Haarlem, and he died of grief in 1575. He left many original works, and edited Martial's Epigrams.

^a *I.e.*, not to the point, out of place: literally, unsuited to the festival of Dionysus (Bacchus).

owner of the goat, who consulted him, that his wealth would greatly increase. Which story is so related by Cœlius Calcagninus* (*lib. 1, Epist. 24*).

“ But to return to plural births: Plinius testifies (*lib. 7, c. 11*) that it is extant in the records of Physicians and of men who were careful to inquire into such matters, that twelve were expelled at one abortion. And it is recorded by Albertus that a certain Woman in Germania miscarried, who had sealed up and preserved in her womb the little bodies of two and twenty infants; yea, another of even seventy. Nay, that wonderment may the more increase, it is reported that another woman cast forth into a basin even an hundred and fifty little bodies of embryoncles of the size of the little finger.^b Which thing was proved when the tunicles in which they were wrapped up were divided. He adds, also, that many of them showed movement of dilatation and contraction, and very many other signs of life; their eyes, however, being somewhat imperfect; and that their fingers and toes were like to hairs. As Cœlius Rhodiginus hath related (*lib. 4, Antiq. lectio. cap. 23*), from Albertus Magnus: and Philippus Camerarius (*Cent. 2, Medita. histor. cap. 66*). But these things may appear but trifles if we should set over against them the prodigious production of Margareta, wife of the Count of Hennebergia,^c who, when Henricus was Emperor, brought forth at one birth three hundred and sixty-five living children. Concerning which thing there is, in Hollandia, not far from Lugdunum Batavorum,^d in the village of *Lausdun*, a marble tablet, containing a clear account of that history; which, for the more lasting memory of this most stupendous fact (if any permanence of this my lucubration may be hoped for), I have deemed worthy of being copied here:—

‘ EN TIBI MONSTROSUM NIMIS ET MEMORABILE FACTUM.
QUALE NEC A MUNDI CONDITIONE DATUM.

Margareta, wife of Hermannus, Count of Hennebergia, daughter of Quartus Florentius, Count of Hollandia and Selandia, sister of

* Celio Calcagnino, an Italian philosopher, poet, and astronomer, born at Ferrara 1479, died 1541. In one of his *Quæstiones Epistolariæ*, he clearly anticipated Galileo, who was not born till more than twenty years after his death—*Quomodo calum stet, terra moveatur, vel de perenni motu terræ commentatio*.

^b *Digitus auricularis*—an expression which I cannot find anywhere else.

^c Saxe Meiningen.

^d Leyden.

Gulielmus, King of the Romans, and afterwards Cæsar or Governor of the Empire, and of Alitheia, Count of Hannovia, whose uncle was Bishop of Trajecta,* and her cousin Duke of Brabantia and Count of Thuringia, &c. This most Illustrious Countess, being about forty years of age, on the very day of the Preparation, about the ninth hour, in the year One Thousand Two Hundred and Seventy-six, brought forth three hundred and sixty-five children, which were all baptized in two brazen basins by Guido, suffragan of Trajecta: of whom as many as were males were called JOHN and all the girls ELIZABETH: all of whom, together with their mother, yielded to fate on one and the same day, and lie buried in this church of LAUSDUN. Which indeed happened through a certain poor woman, who was carrying twins in her arms, whereat the Countess wondering said that they could not have been begotten by one man, and spurned her with contumely. Wherefore this poor woman, perturbed and stricken in mind, imprecating prayed that she might soon bring forth so great a number and multitude of offspring even as the days of an entire year. Which thing indeed happened so, by some amazing means, beyond the course of nature; as is in this tablet briefly stated and related, out of old chronicles, as well written as printed, for the perpetual memory of this event. To GOD, the Thrice-Mighty, be glory, honor and praise for this thing, to never-ending ages. Amen.'

“ But my pen, luxuriating in too free flight, must be recalled at the admonition of Time itself, which was of old so anxiously observed that Pittacus, one of the Seven Wise Men of Greece, is said to have impressed on all, in frequent precept, this alone—*Know the time.*”

Scarcity of time.

EXTIRPATION OF THE UTERUS THROUGH THE VAGINA.

DR. E. KUFFERATH, of the University of Brussels, reports, with a general consideration of the subject of extirpation of the uterus, the case of a woman, forty-five years of age, from whom he removed the uterus by the vaginal method. The disease was of two years' duration. The wound was completely cicatrised six weeks after the operation, and the patient seemed perfectly well for four months and a half, when infiltration again appeared.—*Annales de Gynéc.*, July, 1884, and *Medical News*.

* Utrecht.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Practical Manual of Diseases of Women and Uterine Therapeutics. For Students and Practitioners. By H. MACNAUGHTON JONES, M.D., M.Ch., F.R.C.S.I. & E.; Examiner in Obstetrics, Royal University of Ireland; Fellow of the Academy of Medicine in Ireland, and of the Obstetrical Society of London. Formerly Professor of Obstetrics in the Queen's University, Ireland; Consulting Surgeon to the County and City of Cork Hospital for Women and Children, and to the Cork Maternity, &c., &c. London: Baillière, Tindall, and Cox. 1884. Pp. 410.

WE must apologise, in the first instance, to the author of this work for not having previously noticed it—an omission on our part which arose rather from accident than design.

The manual before us is not the work of a specialist—using this term in a narrow sense—but of an author already favourably known to the students of current medical literature by various and comprehensive works upon other branches of his profession. Nor is it, on the other hand, the work of an amateur or merely ingenious collaborateur, for Dr. Macnaughton Jones's gynæcological experience in connexion with the Cork Hospital for Women and the Cork Maternity was such as fairly entitles him to speak authoritatively upon the subjects with which it deals. In his preface, and here and there throughout the work, Dr. Jones deals some hard blows at specialisms and specialists, excepting only from his strictures ophthalmologists and otologists. We are not quite at one with him in this respect, nor do we regard his argument as at all valid that a more special experience is needed for ophthalmic than for gynæcological work. Nature is very consistent, and the principles which lie at the root of the entire healing art are the same, whether, for example, it be employed for the relief of a vaginitis or a conjunctivitis, of a sarcoma uteri or sarcoma of the retina. Then, again, the various parts of the body—parcelled out among specialists—are so interdependent that no one of them can be treated to the exclusion of the remainder. It would

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be no more justifiable for the ophthalmologist to overlook the fact that certain morbid alterations seen in the retina are due to the existence of Bright's disease, than for the gynæcologist to neglect considering whether certain disorders of the generative functions are due to general rather than to local causes. The truth about specialisms would seem to be that no one has a right to adopt one of them whose previous knowledge does not qualify him equally well to study any of them. Certain virtues and vices are common to every specialism, and on the whole we incline to the view that the former predominate, provided the specialism be such a one as really entails special methods and dexterity in diagnosis and treatment, and not such an "attenuated" one as may be invented for merely "catchpenny" purposes. Ignorance and empiricism are not more distinctive of specialists than of other practitioners, being very fairly ubiquitous. Indeed the list of works (those of Barnes, Thomas, Hart and Barbour, Goodell, Spencer Wells, Tait, and M. Duncan) recommended by Dr. Jones to his readers shows that he is willing to recognise the merits of a great number of those whom as a class he abjures.

But after so many works by avowed specialists we are glad to welcome one upon Gynæcology by an author whose opportunities and energy have enabled him to master the details of so many branches of medicine. We are glad also to be able to state that his work compares very favourably with others of the same kind, and that it does admirably fulfil the purposes with which it was written—"as a safe guide in practice to the practitioner, and an assistance in the study of this branch of his profession to the student." Detailed descriptions of some of the more serious operations are designedly omitted from a work professing such an aim. Ovariectomy, Freund's operation for the extirpation of a cancerous uterus, the various operations for removal of fibroid tumours by laparotomy, Battey's and Tait's operations, and the different procedures for the cure of prolapse of the uterus, are all defined rather than described with minuteness. With all his hard words for gynæcology as a specialism, Dr. Macnaughton Jones confesses that such operations had better be left to specialists, to whom their inception was in every case due. We notice that Tait's operation (salpingo-oöphorectomy) is described in conjunction with that of Battey, as for the relief of fibroid tumours, whereas it would appear more fitting to place it under the head of diseases of the ovaries and Fallopian tubes.

A student's and practitioner's manual does not demand exhaustive criticism. The author of this one appears to us to have caught and correctly interpreted the chief tendencies of our time in matters gynæcological. If we cannot always endorse the conclusions which he teaches, we are bound to say that for none of those from which we dissent is there wanting evidence. In many instances also there is clear proof that original views have been founded upon close consideration and wide experience. Three original additions to the already large armamentarium of gynæcologists are figured and described:—A graduated series of uterine bougies for forcible dilatation of the cervical canal; a “speculum-slice,” useful for conveying away discharges in washing or depleting the cervix through a Fergusson's speculum; and an ingenious “uterine forceps-saw and polyprome,” for removing large polypi in segments from the vaginal canal. The last instrument would, we think, be improved by making its blades somewhat stronger and less yielding than was the case in that originally exhibited before the Academy of Medicine in Ireland.

The book is extremely well printed and brought out by the publishers. The illustrations are numerous, and some of them very good, though this part of the “get up” might be materially improved by omitting a large number of the woodcuts of special instruments, and retaining those of such only as the author desires personally to recommend. In all there are close on 190 woodcuts, of which 120 represent instruments. Useful excision in this direction would give room in subsequent editions for the more detailed discussion of those portions of the subject which are at present somewhat crushed out. A number of the present illustrations may be found in almost any standard surgical work, and others represent gynæcological instruments now consigned to well-merited oblivion. In any case, students and practitioners have almost always at hand for reference in such matters the copiously illustrated catalogues of surgical instrument makers.

The concluding chapter in the volume is entitled “The Ophthalmoscope in Diagnosis.” The instance given from De Wecker of the aid which this instrument can give in diagnosis is borrowed from obstetrics rather than from gynæcology, and the whole of this short chapter concerns rather the relations existing between ophthalmoscopic signs and general diseases, than between ophthalmology and gynæcology. We agree with the author that no practitioner, general or special, should neglect to learn how to use this instru-

ment any more than that he should be ignorant of how to use a stethoscope. We hope, indeed, that Dr. Macnaughton Jones will enlarge this too short chapter into one which will deal with the effects which menstrual derangements undoubtedly have in intensifying ocular trouble. But such connexion as does exist between the sexual organs and the eye exists only through the medium of the system at large, and it is as yet quite unproven that any state of the one can be regarded as a symptom or sign of disease in the other.

There is a tabular appendix upon the principal health-resorts in Europe. Such information as this contains might, we think, be more usefully given specifically in the text, for student and practitioner may be unable to make their selection of a health-resort from among the number here mentioned.

The table of contents and the indices are well prepared, and complete a work which, upon the whole, we heartily commend to the attention of those for whom it was written. It is at least one of the best of its kind, and will do much to add to the author's reputation as one of the very few workers who have been able to master the details of a variety of specialisms.

A Handbook of the Diseases of the Eye and their Treatment. By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I.; Surgeon to the National Eye and Ear Infirmary; Ophthalmic Surgeon to the Adelaide Hospital, Dublin, &c. 127 Illustrations. London: H. K. Lewis. 1884. 8vo. Pp. 442.

THIS work is typically what the author intended it should be—a handbook for students. As such it will be deservedly welcomed. The literature of ophthalmology is so extensive, and the strides made in ophthalmological research and therapeutics have been so rapid, as to render the task of compressing into a comparatively small space the necessary information required by the student a remarkably difficult, if not a well-nigh impossible, task. No one can have started on his work with a deeper sense of the hopelessness of attempting much more than a summary of the most important views on several disputed matters of pathology and methods of operating, in such a compass, than Mr. Swanzy appears to have. Yet, perhaps, in no branch of medical science was a compact and readable student's manual more required than in that of ophthalmic medicine and surgery. The author, in his preface

rightly states that no handbook can take the place of clinical study. Perhaps he has referred to that special study which, before and beyond all others, save that of dermatology or otology, requires to be practically seen, and worked in the hospital clinique, in order to obtain any accurate idea of the *rationale* of treatment and a special facility in diagnosis. But that student is more than repaid who devotes some of his time to the clinical study of diseases of the eye. The diseases of the eye and skin are, of all branches of his art, those which sharpen his powers of observation, and which he most plainly sees yield a response to correct diagnosis and rational treatment. From day to day the intelligent student can watch the course of the affection before him, notice the finest shades of improvement or disimprovement, test the results of treatment, and verify for himself the truth of both diagnosis and prognosis.

It is the one branch of all others of medical science in which the practitioner can, in almost all its details, feel the satisfaction of knowing that he is treading on certain ground, and that ophthalmology is not merely a science in name but in reality. About its practice, there is less room for charlatanism and less excuse for empiricism than in almost any other. From the simplest affection of the eyelid to the most uncommon retinal lesion, the grounds of treatment are scientific and rational. What more perfect training for the student than watching the practical application of the laws of optics to the various refractive anomalies of the organ of vision, and the study of the effects of these abnormalities on the visual apparatus, or the influences they exert in inducing various diseased conditions of the eye? In what manner can he be better taught to make careful method—systematic and comparative observation—or the combination of gentle and dexterous manipulation—his aim in practice, than by critical and daily use of the ophthalmoscope and assisting in delicate eye operations? But more serious still has the neglect of this study on the part of the student or practitioner become since we have learned to understand the aid afforded by the ophthalmoscope in the diagnosis of morbid cerebral, cardiac, and renal states. We need only instance hæmorrhages from the retinal vessels in disease of the aortic and mitral valves, and atheroma of the arteries or aneurysm; the relation of retinitis and retinal hæmorrhages to disorders of menstruation and suppression of the menstrual flow; the occurrence of retinal hæmorrhage in progressive pernicious anæmia; the ophthalmoscopic appearances found in connexion with Bright's disease of the kidney, and the retinitis of

diabetes; the peculiar infiltration of syphilis, and the disseminated spots of syphilitic chorioiditis; the retinal indications of morbid blood changes during pregnancy, and the premonitory warnings of puerperal eclampsia; the diagnosis of a cerebral tumour through the presence of congested papilla (*Stauung Papilla*); the characteristic amblyopia which is attendant on optic nerve atrophy from the excessive use of alcohol or tobacco; the peculiar gray atrophy of the optic nerve which is found in *tabes dorsalis*, and which accompanies the neuritis of the earlier stages of locomotor ataxia, and which is almost pathognomonic of the advanced stages; or, lastly, the various oculo-motor disturbances, such as ptosis, strabismus, contracted or dilated pupil, which are indicative of cerebral, spinal, and sympathetic mischief or lesions. How much, then, is it to be regretted that the attendance of students on an ophthalmic hospital, or a course of clinical ophthalmology, is enforced by only two Corporations in the United Kingdom—the University of Dublin and the Royal College of Surgeons in Ireland—a course which, it should be remembered, is as necessary for the future physician as the surgeon?

The plan of Mr. Swanzy's work is admirable. There is an opening chapter on elementary optics, with illustrations of the action of lenses, and of the eye regarded as an optical instrument. This chapter explains also the acuteness of vision, the angle and the field of vision, and the numbering of trial lenses. Chapter II. treats of the different forms of abnormal refraction and accommodation; Chapter III. is devoted to the ophthalmoscope, retinoscopy, and the normal fundus oculi; Chapters IV. and V. to division of the conjunctiva; Chapters VI. and VII. deal with affections of the eyelids and lachrymal apparatus; Chapters VIII., IX., and X., treat of diseases of the cornea, sclerotic, and iris; Chapters XI. and XII. relate to disease of the ciliary body and chorioid. There are separate chapters devoted to the consideration of sympathetic ophthalmitis, and "the motions of the pupil in health and disease." For introducing the latter chapter the author apologises in his preface (most unnecessarily, to our mind), but it furnishes a very valuable addition to this book when placed in the hands of the general student and practitioner. We are tempted to regret that we have not more than seventeen pages devoted to the important subject of glaucoma (Chap. XV.), and we must say that the recent views of the pathology of this serious, yet common, disease of the globe, though they all are

referred to, are hardly explained with that lucidity which a student reading of the affection for the first time would require, nor can we say much for the explanation given of the *modus operandi* of eserin in the treatment of this disease. The introduction in this chapter of some of the admirable plates of Priestley Smith, and drawings of the section showing the filtrating media, as altered by the glaucomatous process, might not have been amiss.

There is a clearly written and concise chapter on disease of the crystalline lens, including the various operations necessary for the cure of cataract. This is followed by four chapters on affections of the vitreous, retina, optic nerve, amblyopia, and amaurosis, while the two concluding chapters are devoted to "the motions of the eyeballs, with their derangements, and diseases of the orbit."

Turning now a little more critically to the work before us, we can only notice here and there a few of its important features and statements. In the chapters on refraction, accommodation, and the ophthalmoscope the student and practitioner will find sufficient information clearly given to enable him to treat such errors of refraction as hypermetropia, myopia, and astigmatism. We should have expected some detailed directions for the use of atropin and eserin in the treatment of myopia. The author does not even refer to the latter of these therapeutic agents in his chapter on the management of myopia. The use of the ophthalmoscope can be learned only by practice, but in Chapter III. the surgeon has explicit details of its application in the estimation of errors of refraction, while the principle of retinoscopy is also fully explained. We are glad to see the caution in Chapter IV., "that the long-continued use of even a weak solution of nitrate of silver as eyedrops discolours the conjunctiva, and should be guarded against." Even to the present day the abuse of nitrate of silver in the treatment of conjunctival affections is one of the relics of the many barbarisms practised in eye-surgery a quarter of a century since. The author speaks highly of an ointment of sulphate of copper, gr. $\frac{1}{2}$ to gr. 2. in 3i. of vaseline, in the treatment of follicular conjunctivitis. There is a good description of granular conjunctivitis. We rather regret to see that the old custom of treating chronic granulations by means of solid sulphate of copper is too generally recommended, at least without insisting on the discrimination required in its use, and the irreparable results which follow its careless application when both granulation and healthful conjunctiva are subjected to its escharotic effect. After years of experience in treating many thousands of cases of "granular lids,"

we can safely assert that no one form of treatment has given, almost universally, such good results as the careful application of nitrate of silver solution (*recently made*)—gr. 10–20, ad ʒi.—permitted to remain on until the white chloride shows on the conjunctiva, and then carefully washed off with weak solution of common salt and *fresh running water*. The author hardly says sufficient in favour of peritomy in the treatment of pannus, though he accurately describes this operative measure for its cure. The brief allusion at page 95 to the action of jequirity is not full enough in a student's text-book, nor are the researches of Warden and Waddell or of Klein or of A. H. Benson referred to, disproving the bacillus theory of jequirity ophthalmia, and proving its dependence on a soluble ferment in the plant (root and stem as well as the seeds) *Abrus precatorius*.

The too general advice in regard to the use of mercury in a case of chemosis, due to acute blennorrhœa of the conjunctiva, is hardly to be approved in a book for beginners. Mercury in these cases is frequently a two-edged remedy, and students should be impressed with the necessity for considerable care in its administration, whether by mouth or skin. The management of blennorrhœa neonatorum does not receive that attention at the hands of Mr. Swanzy that its importance demands. We should not wish to entrust the care of an infant's eyes attacked with purulent conjunctivitis of a gonorrhœal character to a man whose entire knowledge of its treatment was derived from the information here given. In alluding to corneal complications the result of blennorrhœa, we would have desired some more authoritative statement regarding the use of eserine than the following:—"Those who believe in the power of the myotics to reduce the normal tension of the eye, employ solutions of pilocarpine or of eserine in place of atropine." We know of no more unfortunate impression that can be left on the mind of practitioner or student than the idea that the selection of a mydriatic or myotic in treatment is a matter of individual choice or prejudice. In no class of affections outside the glaucomatous condition is this so important as in ulcers of the cornea, both as regards their size and position, nor do we consider that the indications and contra-indications for the use of these most important therapeutic agents, atropine and eserine, or their correlatives, duboisin and pilocarpin, have been sufficiently insisted on in any part of Mr. Swanzy's work. We think also that the superiority of the salicylate, or hydrobromate of eserine, might with advantage have been pointed out.

At page 174, again, we find that in the treatment of *ulcus serpens*

of the cornea "*some surgeons prescribe eserine.*" The antiseptic action of eserine we find nowhere referred to, and surely, after the evacuation of pus from the anterior chamber by Sæmisch's method, few surgeons would hesitate to employ eserine. We commend to all his readers the valuable and sound conclusions regarding enucleation of the globe in cases of injury. Most numerous are the blunders, and most lamentable is the ignorance shown in the reckless disregard of consequences which frequently follow from want of decision in enucleating severely injured and diseased globes.

We would have wished, especially in a work intended for the student, a short chapter on the treatment of injuries of the eyeball, pointing out those injuries of peculiar danger to the eye injured, and most likely to be attended by sympathetic inflammation in the other eye, the best means of treatment, as well as the indication in special cases for enucleation, as, for instance, in penetrating wounds of the globe in different situations, gun-shot injuries, explosions of gunpowder, wounds from glass, &c. But too much ought not to be expected from a comparatively small work such as the one Mr. Swanzy has written, and, as we have pointed out, any faults are those rather of omission than of commission. We have read through the pages of this Manual with great pleasure. It is most admirably written, and does full justice to the views of many leading foreign and home authorities. It fulfils exactly the object of the author, and will be found by the student who is puzzled between the insufficient and meagre descriptions in the general text-books, and the larger special treatises which he has not time to read, an excellent and reliable handbook for the ophthalmic hospital. We have seldom taken in our hand a book which in its entire finish reflects greater credit on its publisher. On the whole we most heartily congratulate Mr. Swanzy and the Dublin School on the production of a book which was much needed, and which contains in a condensed, yet most readable form, all the latest and most authoritative teaching on the subject of which it treats. H. M. J.

An Index of Surgery. By C. B. KEETLEY, F.R.C.S.; Senior Surgeon to the West London Hospital, and Surgeon to the Surgical Aid Society. Second Edition. London: Smith, Elder, & Co. 1884. Pp. 494.

THE fact that Mr. Keetley's Index has so soon reached a second edition is a proof of the favour with which it has been received,

and we note many points in the present edition which cannot fail to increase its popularity.

The task of presenting, in well-digested notes, the enormous amount of material represented by modern surgery, is one of no little difficulty, and we congratulate Mr. Keetley upon the success which he has obtained. It is too frequently the case that so-called "notes" are so crude and fragmentary that they convey either erroneous or no ideas to the reader—to this class belong the many cram books which we have so frequently denounced in these pages; but in the work under consideration there is nothing that is not to the point, and the information, although condensed, is so clearly put that it will impress itself more firmly upon the mind of the student than the more voluminous descriptions in many of the leading text-books.

If we take, as an example of the teaching in this work, the article on Injuries of the Head, we find that in 17 pages there is to be found more information than in many of the more pretentious volumes.

On the subject of trephining Mr. Keetley, alluding to the observations of Dr. G. F. Yeo,* states his opinion that antiseptic trephining may have in the future a larger share in the treatment of intercranial tension than has recently been accorded to it. On the Localisation of the Function of the Brain there is a very admirable digest of the views of Ferrier and others, in which all the important surgical points are alluded to.

In the Radical Cure of Hernia the recent improvements are discussed, the whole subject is considered in a very unprejudiced manner, and the author draws special attention to the important fact that when an attempt to procure a radical cure is added to the ordinary operation for strangulated hernia, the prognosis is thereby improved, the communication between the peritoneal cavity and wound being cut off.

The article on the Urethra is one of great merit, and we commend it to the careful attention of the reader; the rules for the treatment of stricture are sound and simple, and the varieties of febrile disturbance following catheterisation are clearly differentiated.

In the preface to the second edition Mr. Keetley says:—

"Antisepticism and asepticism constitute so essential a part of modern surgery that no choice remains to me except that between a series of incongruous statements on the one hand, and on the other a

* Brit. Med. Journal, May 14, 1881.

consistent work written from the point of view of a thorough-going believer in Listerism."

And when treating of wounds he brings together, in a readily accessible form, the principal statistics in support of Listerism. Dealing with the opponents of this method, he says:—

"Repeatedly of late have the student and practitioner been invited to deprive themselves and their patients of the safeguards offered by modern science on the strength of a comparison between the statistics of two places only. Such a comparison no more furnishes an argument against Listerism than the security of those Arcadian farmers, who had neither locks to their doors nor bars to their windows, condemns the use of the Metropolitan Police."

Throughout the whole book are to be found touches of humour which add much to the pleasure of reading it, and we recommend the book both to students and practitioners as—what it purports to be—a note-book of surgery.

Manual of the Dissections of the Human Body. By LUTHER HOLDEN, late President of the Royal College of Surgeons, England; Consulting Surgeon to St. Bartholomew's, and the Foundling, Hospitals. Fifth Edition. Edited by JOHN LANGTON, Surgeon to, and Lecturer on Anatomy at, St. Bartholomew's Hospital; Member of the Board of Examiners, Royal College of Surgeons, England, &c. London: J. & A. Churchill. 1884. Pp. 846.

It is with great pleasure we observe that this most useful work for students has reached its fifth edition, which is a convincing proof of its popularity and appreciation by those engaged in the practical study of anatomy. The present volume is edited by Mr. Langton, who assisted the author in the preparation of the two preceding editions; and, although it is by him to a large extent re-written, it does not depart from that simple and expressive language which we find in all of Mr. Holden's writings, which is so much to be commended in a work designed for the use of students.

The increased bulk of the present volume by the addition of 200 pages may be considered an objection, as rendering the work somewhat unwieldy for dissecting purposes; this objection, however, may be advanced against most of the text-books of the present day, and on perusal of the present volume it will be found that very little superfluous material exists in it. The diagrams (thirty of which are new) are extremely well executed and clear, and will be

found of much advantage to the student in assisting him to grasp the more intricate parts of anatomy. The introduction of the very useful surgical remarks, and the care bestowed on the surface markings, are to be highly commended as tending to retain the student's interest, and to demonstrate to him the practical value of the study in which he is engaged. The retention of the sectional divisions of the parts—each complete in itself—should do much to render the work convenient for study and reference. The general text is fully up to the present date both in its anatomical and histological details. In treating of the cranial nerves, the editor accepts the classification of Sömmerring, and introduces some admirable diagrams. The dissection of the thorax displays the care taken by the author, by diagram and by text, to clearly define the position of the heart and the relations of its various valvular orifices to the walls of the chest. Several details of this section remind us forcibly of Mr. Holden's *Surgical and Medical Landmarks*.

The dissection of the inguinal region deserves special notice as an extremely lucid and correct description of this part—a remark which also applies to the dissection of the perineum. The sections on the brain, eye, and ear are well abreast of the latest information, and, although treated of in the briefest manner, contain an immense amount of information.

Throughout the work there are, however, a few points to which we would like to direct the editor's attention. After having described the pulmonary semilunar valves the statement is made that the valves at the aortic orifice are "similar in arrangement," thus leading the reader to infer that two are placed anteriorly and one posteriorly, which is the reverse of what is now usually accepted as the position of these structures. The relations of the roots of the lungs to surrounding structures are not mentioned, while the average weight of the lungs is stated differently at pages 166 and 221. The superior boundary of the axilla is not clearly defined.

The superior attachment of the pharynx to the body of the sphenoid bone is not mentioned, while, in our opinion, it has but a very slight attachment to the basilar process of the occipital bone.

We must also draw attention to the statement that the mucous membrane, covering the inferior thyro-arytenoid ligaments, has ciliated columnar epithelium (? stratified squamous epithelium).

We would wish to see this volume more generally in the hands of Irish students, to whom we can recommend it as a thoroughly reliable handbook.

Medical Education and the Regulation of the Practice of Medicine in the United States and Canada. Prepared by the Illinois State Board of Health, and published by permission of the Board. Revised and corrected to March 1st, 1884. Chicago: W. T. Keener. London: Trübner & Co. 1884. Pp. 270.

THIS is not a book to be read through—except, of course, by the conscientious reviewer; belonging to Charles Lamb's category of *Biblia abibiblia*. It is very valuable, nevertheless, and its publication most opportune in these days in which Dr. Buchanan and his like find a ready sale for sham American degrees. We can now know, with the help of this Report, what the American institutions empowered to confer degrees are, and what qualifications each requires. We shall cease to confound, as too many do, respectable, and more than respectable, transatlantic schools with corporations which can only by an abuse of language be called schools at all; or, worse still, with unchartered, fraudulent combinations of mercenary pretenders, or with individual swindlers.

The State of Illinois has taken the lead in the efficient regulation of medical qualifications. In 1877 its Legislature passed the Medical Practice Act, "to Create and Establish a State Board of Health in the State of Illinois." This Board was directed to "issue certificates to all who furnish satisfactory proof of having received diplomas or licences from legally-chartered medical institutions in good standing." Without such certificate any person practising medicine or surgery is liable to fine and imprisonment. It became necessary to define "good standing," and a committee was appointed by the Board to frame a "Schedule of Educational Requirements and Methods." The schedule so prepared was adopted by the Board, its application being limited to diplomas issued after the session 1882-83. We need notice only a few points in this schedule, which formulates the minimum of education required of medical practitioners in Illinois. It demands a preliminary degree in arts, or the passing of "a thorough examination in the branches of a good English education, including mathematics, English composition, and elementary physics or natural philosophy; hygiene is one of the subjects of instruction; *two* full courses of lectures, of not less than five months each, are necessary to medical graduation, the two not being attended in the same year, and attendance at *all* lectures (except in case of illness, when 20 per cent. may be omitted) being compulsory; teachers must examine their classes at least twice a week; and *three* full

years must be spent in professional study before admission to graduation. This schedule has been adopted by the Boards of Health of the States of Missouri, Minnesota, and Western Virginia; and its adoption in Alabama was under consideration when this volume was issued.

Even the State Board of Health of Illinois is not, it is evident, very exacting in its requirements; but the few samples which we shall proceed to give of qualifications deemed sufficient in other States will show what an advance has been made in American medical legislation. Information is given in the work before us upon 227 medical institutions (of which 15 are Canadian), and of these 135 are now in existence. The Board has not had occasion to adjudicate upon all these, so far; but a list of 24, existing or extinct, which are *not* recognised, is appended; and it is clear that not a few others are deserving of the same "bad eminence."

For example, the "Medical Department of Florida University (*Tallahassee College of Medicine and Surgery*)" is not yet on the *Illinois Index Expurgatorius*. It was organised in 1883, and has six professors, besides a "human skeleton and dissected preparations, such as will make the labours of the dissecting-room less disagreeable." No preliminary education is required. "Any suitable person of any school of medicine that can stand a thorough examination by the faculty," may graduate; paying £12 for all the lectures of all the chairs, £5 examination fee, and nothing for his diploma. The "dean" is described after the fashion of turbulent Thomas Atkins' remarks to his superior officer, as veiled in the modest typography of court-martial reports:—"the Rev. _____, A.M., M.D., LL.D., of _____ and _____;" and the college announces that "the members of the faculty all defer complacently to the views and expositions of their dean, who is an elderly and experienced physician, and author in medicine of extensive works on various branches, whose primary medical education was allopathic, but who has, for years, been entirely devoted to a reform in the healing art, and a reconstruction of the theories of the science of medicine." This eminent man teaches, or at least is "incumbent of the chairs of" general and special pathology and of medical jurisprudence in the Georgia Eclectic Medical College, Atlanta, in addition (apparently) to his duties at Tallahassee. We cannot forbear quoting the following extracts from the college circular:—"The requirements for graduation are the equivalent

of those of the highest order of medical colleges in our country. But, as is known to everyone of good judgment and experience, no time rule or routine order can be a proper basis of graduation." "Intellectual power and good sense are prime factors of professional competency—these, with proper instructions, without reference to time or form, can alone suffice." "Candidates for graduation or degrees must be responsible for themselves." "Persons graduating from this college will be competent to practise medicine on any of the popular systems!"—(P. 74.)

In Atlanta (Georgia) there is an "Eclectic" College of American Medicine and Surgery, which started in 1839 as the "Southern Botanico-Medical College," and became subsequently the "Reform Medical College." Its professional requirements are reasonable enough; but the dean "cannot vouch for any of the graduates previous to 1882–83, the earlier records having been destroyed by fire, and the late records stolen." The following announcement in the *Eclectic Star*, the organ of the college, is amusing:—"The janitor will meet all the day trains from the first of October, and will have a badge on his hat. He will bring you direct to the college and will attend to your baggage; will furnish free ride to those who matriculate at this college. Do not be misled. Come, and do not listen to a single drummer until you visit us."—(P. 78). There are three other "Medical Colleges" in Georgia.

There is no law regulating the practice of medicine in Indiana. It is not, therefore, surprising that the first fraudulent medical school of the western United States should have arisen and flourished here. Its history is interesting. In 1833 John Cook Bennett, M.D., LL.D., chancellor, secretary, &c., of the "University of Indiana," visited New York, and proceeded, with the help of two local accomplices, to issue diplomas in medicine for £5 each. The New York County Medical Society took the matter up and appointed a committee to report upon these qualifications purporting to issue from the University of Indiana. It was then ascertained that the "University" had a legal, corporate existence; that its charter empowered it to confer eight different degrees on males and seven on females; that John Cook Bennett was "bishop and secretary of the general university, and president, chancellor, and professor of midwifery in the medical department;" that "by a by-law the bishop was authorised to send out commissioners to confer degrees, &c.;" and that the institution possessed "no buildings, apparatus, or facilities of any kind to teach physic and surgery,

had not given any full course of instruction, or provided for any lectures on medical science."

The exposure of the "Bellevue Medical College of Massachusetts" in 1882 (through the exertions of the Illinois State Board of Health) led to an immense improvement in the medical legislation of that State. The college was duly organised under the statutes relating to "*Manufacturing* and other corporations," and when the case came before the courts it was decided that the college was legally authorised to issue degrees, the faculty "being the sole judges of eligibility of applicants for diplomas." "If the faculty choose to issue degrees to incompetent persons, the laws of Massachusetts authorise it." Immediately the "American University of Boston" and the "First Medical College of the American Health Society" were incorporated under the same statute as the Bellevue, and the "Excelsior Medical College" was projected—for the purpose of supplying medical degrees at £30 apiece "without study or lecture attendance." This manufacturing industry, however, collapsed when an Act was passed in 1883 forbidding the conferring of medical degrees by corporations organised under the "manufacturing" statutes unless specially authorised to do so by the Legislature.

In Maine the "Penobscot Valley Gorsedh of Bards and State of Maine Branch of the Druidic University of America" was organised in 1880, and is chartered. It has "teachers in all departments," and graduates students according to the "seven years' curriculum of the bards." We have no particulars of this mysterious curriculum, nor any information as to its results.

The Illinois Board frowns upon the "Kansas City Hospital College of Medicine," and refuses to recognise its diplomas, as also does the Missouri Board. With charming impartiality this college appoints one professor to teach "allopathic theory and practice and clinical medicine," and another for "homœopathic therapeutics and materia medica and theory and practice." Of course the faculty "is composed of gentlemen of culture from every school of medicine that is recognised for its merits." "Materia medica, embracing allopathic and homœopathic and eclectic," is taught, and "the physiological action of drugs will be practically demonstrated," presumably, according to whichever system the student pleases.

Of the present state of medical legislation in New York, dating only from 1880, there is little unfavourable to be said. On the whole, it is far superior to our own. Of its previous condition it is enough to say that before that year *one hundred and fifty* bodie

were authorised to qualify medical practitioners, the population being a little over five millions. The number is now *thirteen*: and no one can complain of its insufficiency.

Ohio is unique in its sanction of the one-man power. The "American Health College" organised itself without difficulty some ten years ago, the faculty being concentrated in one person, who teaches "the great vitapathic system, which he originated and copyrighted." The advantages of this institution may be gathered from the following extracts from the founder's "little red book." We have ventured to *Italicise* some passages:—

"The author furnishes books, printed lessons, formulas, receipts, specifics, and special modes of vital treatment for all diseases, with the sure method of diagnosis, and all lessons belonging to the vitapathic system, *with diploma and full right to practice*, to physicians of all schools and all well-qualified persons *who can learn the new system at home*.

"Males, for \$100. Females, for \$75.

"N.B.—Students can get general medical instruction wherever most convenient, but best at our branches in the different cities of the Union, preparatory to applying here for vitapathy and its higher graduation, with the grand diploma of the American Health College, *the highest institution in the world*.

"College open for instruction and graduation at all times. *Terms cash*.

"No diploma, or books, or lessons, or rights sold separate. All must go together to complete the system to fully paid-up students. The American Health College is not intended to supersede other medical or health colleges, or other medical instruction, some of which may be good, as far as it goes in the right direction, and as such is preparatory to the higher vitapathic instruction. But the American Health College is organised and established to teach physicians, and advanced students of all schools, the higher and better vitapathic system, and to instruct and graduate a higher grade of health doctors, who shall understand the whole physical and spiritual dual man, and understand the full nature of his physical and spiritual diseases, and know how to cure them."—P. 209.

This sort of thing sounds like a clumsy joke, but it is really a practically serious matter. In one instance a man attempted to practise in Illinois on the strength of a "vitapathic" diploma; which, we need scarcely say, is not recognised by the Board of Health. He was promptly arrested and prosecuted, and compelled to carry his vitapathy to some State more tolerant of medical imposture than Illinois.

In Utah there are 139 "physicians"—1 to 1,035 of population: but there is no medical legislation whatever; except, indeed, one clause in the penal code providing for the punishment of misdeeds committed by a physician *when drunk*. In Salt Lake City *anyone* can obtain a licence to practise medicine by paying one dollar into the city treasury. There is no medical school in the State.

From the valuable tables at the end of this volume we learn that there are eight colleges for the medical education of women only in North America; of which two are in the Dominion of Canada, one in Toronto, the other in Kingston. The latter was organised last year, in consequence of the Royal College of Physicians and Surgeons, Kingston, having closed its doors to women, previously admissible. In forty colleges in the United States women are admitted equally with men. There are four institutions for coloured students only, and one for both white and coloured. In the United States, with a population of 50,291,939, there are 86,923 "physicians"—1 to 578: the proportion varying from 1 to 329 in Maryland to 1 to 1,494 in New Mexico. The kind of physician is not specified; but we find that of 11,791 medical students 9,831 are "regular," 1,173 homœopathic, 756 "eclectic," and 56 "physio-medical."

TREATMENT OF GASTRIC ULCER.

NOTICING the inconveniences and even the dangers attending the exclusive use of a milk diet in cases of this disease, and starting from the theoretical idea that if stomachal digestion could be completely suppressed, and the action of the gastric juice annulled, the cure of ulcer of the stomach would be greatly favoured, M. Debove has devised a new method of treatment, which he has found very successful in two serious cases of this affection. By rendering the gastric juice alkaline, its digestive properties are removed, and the transformation of albuminous substances into peptones hindered. Aliments not digested in the stomach, thanks to this device, pass into the intestine, their alkalinity being very favourable to intestinal digestion. M. Debove has obtained the effects he desired by making his patient take three meals in the twenty-four hours, each meal being composed of twenty-five grammes ($6\frac{3}{4}$ drachms) of powdered meat, and ten grammes ($2\frac{1}{2}$ drachms) of bicarbonate of soda. It is advisable to introduce this mixture into the stomach by means of the siphon tube, as it has a disagreeable taste. The patient is also allowed to drink one litre of milk, in small quantities at a time, during the day.—*Le Progrès Méd.*, July 12.

PART III.

HALF-YEARLY REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.*

By RINGROSE ATKINS, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

I. INSANITY IN GENERAL.

Self-recognised Insanity.—Dr. Morandon de Montyel (*Archives de Neurologie*, July, 1883) concludes:—That by the term “self-recognised insanity” (*folie avec conscience*) is meant the mental state of that class of patients who, having meditated on their psychic troubles, analyse them, and then recognise their morbid nature. This condition is found at the outset of all the vesanias, and of a large number of cases of paretic dementia. It is met with sometimes in the course of paretic dementia, in melancholia often, and in acute mania very frequently. It is relatively rare at the termination of the vesanias. Self-consciousness of insanity is sometimes a constituent element of mental alienations, sometimes merely superadded. It is a constituent element of hypochondria, agoraphobia, and impulsive insanities. It is superadded on mania, lypemania, erotomania, and allied states. The insane who recognise their insanity usually belong to the intelligent classes of society, and have an insane heredity. Paretic dementers are conscious of mental defect at the outset, but rarely during the course of the disease. Epileptics are not conscious.

Self-recognition of insanity may be complete or incomplete. The first is most frequent. Consciousness is more frequent in general insanity than in partial insanity. The first class are, as it were, spectators of mental troubles whose morbid nature they recognise, but which they are powerless to prevent. The preservation of consciousness in stupidity (melancholia with stupor and stuporose

* The author of this Report, desirous that no contribution to the subject of Nervous and Mental Disease should remain unnoticed, will be glad to receive any publications which treat of it. If sent to the correspondents of the Journal, they will be forwarded.

insanity) is an argument in favour of the clinical existence of this form. Semi-consciousness is usually present in partial insanity. Hallucinations and megalomaniacal ideas are rarely, if ever, recognised as of morbid origin by the sufferer from them. While most of de Montyel's conclusions are justified, he has failed to differentiate hypochondriac ideas of being insane, and cases of healthy conceptions from the condition designated as "self-recognised insanity."—*Alienist and Neurologist*.

Folie à Deux.—Dr. G. Lehmann (*Archiv für Psychiatrie*, Bd. XIV.) describes a case of this kind in two sisters, daughters of a neurasthenic mother, themselves neurasthenic, who became insane. The first manifested decidedly nymphomaniacal tendencies at the time of menstruation, accompanied with auditory hallucinations and illusions of taste and smell leading to a refusal of food, depression, and attempts at suicide. A younger sister, who accepted the delusive ideas of her sister, was attacked by auditory, olfactory, and gustatory hallucinations, and deplored her misfortunes, but was also nymphomaniacal. The suppression of the menses, which occurred at the onset of the psychosis, was treated with success in both cases as regards the menstruation, but, while the younger sister recovered, the elder remained a chronic case. It is obvious that the tendency to imitation so strong in hysterical females played a part in determining the insanity of the younger sister. The influence of imitation in the production of such cases has been pointed out by Hughes and de Montyel.—(*Vide* previous Reports.)

Delusions of Memory.—Meynert (*Jahrb. f. Psych.*) cites the case of an otherwise sound man, who had the delusive remembrance of having seen a cleared space in a forest in which grew a flower. This was based on a hallucination which was remembered as an actual perception. Meynert and Buccola (*Revista di Filosofia Scientifica*) believe that the hallucination which is remembered as an actual perception results from an irritation which produces contraction of an arterial vessel leading to a diminution of pressure in collateral branches and resultant hyperæmia. When consciousness is regained, the subjective sensation is reproduced in such colours under the influence of the hyperæmia that the sensorium preserves the impression of it, and the hallucination remains as a remembrance of an actual perception.

Insanity and Diabetes.—Snell (*Psych. Centralblatt*) and Cotard (*Annales Méd.-Psych.*) call attention to the fact that mania and melancholia may alternate with glycosuria. Santos (*Annales Méd.-*

Psych.) states that diabetes sometimes alternates with insanity. In many cases of diabetes there exists a specific mental disturbance characterised by depression, and occasionally leading to suicide. The intensity of the symptoms is directly proportionate to the amount of sugar in the urine. Later in the course of the disease the patient sinks into a state of quiet apathy, talking to himself, but is without delusions. This condition often lasts till death. Madigan (*Journ. of Nervous and Ment. Dis.*) reports several cases of insanity in which glycosuria alternated with maniacal symptoms. In the cases of circular insanity, sugar was present in the urine during the sane intervals and melancholic stage. Dr. J. Turner reports a case in which the disappearance of glycosuria was followed by typhomania, to which the patient succumbed. Hughes maintains that glycosuria and melancholia more often alternate or co-exist than has been generally supposed.—*Alienist and Neurologist.*

Insanity from Scarlatina.—Of insanity caused from scarlatina, Mendel (*Deutsches med. Wochenschrift*, March 19, 1881), Kräpelin (*Archiv für Psych.*, Bd. XI., Hft. 1), Schultz (*Archiv für Psych.*, Bd. II., 721), Rabuske (*Deutsches med. Wochenschrift*, Oct. 13, 1881), Krauss (*Zeitschrift für Psych.*, Bd. XII.), Spitzka (*Journ. Neurology and Psychiatry*, Vol. I.), Pritchard (*Gaillard's Med. Journ.*, Vol. XXXV.), Weber (*Med. Chir. Trans.*, Vol. XLVIII.), Thoré (*Annales Med. Psychol.*), Bucknill and Tuke (*Psychol. Med.*, p. 257), and Thomas (cited by Kräpelin), have all reported cases, the predominant characteristics of most of which were casual hallucinations, accompanied by marked motor excitement. Cases of dementia are also reported as having resulted from a meningeal change, secondary to the scarlet fever. Kiernan (*Journ. Nerv. and Ment. Dis.*) comes to the following conclusions:—1st. That three groups of mental phenomena are produced by scarlatina independently of delirium. 2nd. That the first is a species of melancholia agitata attended by hallucination, and its inception is preceded by a decline to normal of the high temperature previously existing. 3rd. That the second group consists of cases of dementia due to meningitis of scarlatinal origin, the patient passing from the hyperpyrexia of scarlatina to that of meningitis, on recovery from which he is found to be demented. 4th. That the third group of patients show either marked change from the character antecedent to the attack of scarlatina, or else retain in after-life some of the juvenile characteristics of the period prior to the attack of scarlet fever, or occasionally become victims of moral insanity. Dr. Wick

(*Cincinnati Lancet and Clinic.*, March 10, 1883) reports the following case:—Last December he attended a young man, aged eighteen, during a severe attack of scarlet fever, a typical case, in which the rash came out fully, and the throat trouble was severe. Just after the fever subsided, and recovery promised to be rapid, he showed signs of delirium, was affected with hallucinations, restless, sleepless, talkative, and very humorous at times. He imagined some one was after him with firearms; would jump out of bed and run into another room, or get under the bed; he could be kept in bed only by his father at the bedside. His temperature at the time was normal, and appetite good. This condition lasted nearly a week. He was controlled with full doses of chloral, and caused to sleep soundly during the last few nights of his insanity. He made a good recovery, after about two weeks' illness in all. Desquamation began about this time. This, it will be observed, was a case of the kind which Thomas classes amongst the psychoses of convalescence.—*Allenist and Neurologist.*

Early Symptoms of Paretic Dementia.—Dr. W. B. Goldsmith (*Archives of Medicine*, Aug., 1883) comes to the following conclusions:—1. That the striking and characteristic group of symptoms ascribed to the disease by Calmeil in 1826, and having the greatest prominence in text-books since, is to be found only exceptionally in the cases of to-day, at the time when the diagnosis is most important. 2. That physical and mental symptoms usually appear nearly synchronously, so that the physician has the presence or history of both to aid him when called upon for a diagnosis; and it is probable that most of those who report cases of paretic dementia without mental impairment are not sufficiently expert to recognise a moderate degree of dementia. 3. That their observations agree with those of most writers in making defective articulation the most frequent and characteristic early motor symptom. 4. That changes in the pupils and disorders of gait are less frequent and have less value in diagnosis than is usually ascribed to them, and that given pupillary changes are no more frequent in one stage of the disease than in another. 5. That the patellar tendon reflex is found markedly supra-normal in nearly 25 per cent. of paretic demented, and that the presence of this symptom is of strong corroborative value in diagnosis, though its absence has none, and that no peculiar condition of the patellar tendon reflex can be associated with any given stage of the disease. 6. That hallucination or impaired function of the special senses is very rare as an early symptom,

hallucination (auditory) having been noticed first in but one of Goldsmith's cases, and impaired vision but once in a syphilitic case. The diminution in the sense of smell, which Voisin thinks very frequent in the early stages, was not noticed in any of Goldsmith's cases, though it may have been present and escaped attention in some, as slight failure is difficult to recognise. 7. That it is of great importance in the case of a patient showing mental symptoms to inquire carefully for a history of convulsions or loss of consciousness, as these were the first motor symptoms in twenty of Goldsmith's cases.

Trophic Changes in the Hair of the Insane.—Dr. C. R. Reinhardt (*Virchow's Archiv*) reports a case of periodical changes in the hair of an epileptic idiot. During the period of excitement the hair changed its colour from yellow to red and black; during the condition of stupor the hair resumed its normal condition. Kiernan (*Journal of Nerv. and Ment. Dis.*) called attention to the fact that trophic changes in the hair and skin were frequent in hebephrenia, epileptic insanity, paretic dementia, *folie circulaire*, &c. The occurrence of premature grayness in the descendants of neuropathic and psychopathic families is unrelated to the same subject.—*Journ. Nerv. and Ment. Dis.*

[I have at present under my care a male patient, a young man, the subject of dementia of a mild type, in whom the hair rapidly changed from black to gray. The gray hair, which was dry and weak, then fell out, leaving large patches bald. Upon these patches hair again subsequently grew of a gray colour, and this afterwards became black once again. I had previously seen one similar case in the person of a female affected with chronic mania.—*Rep.*]

Vertigo amongst the Insane.—Dr. J. Miller (*An. Med. Psychol.*) concludes:—1st. Vertigo is of frequent occurrence amongst the insane. 2nd. Mania is least often affected by vertigo. In melancholia, especially of the anxious, vertigo is much less rare. Vertigo is quite frequent in acute and chronic alcoholism, in senile, apoplectic, and paretic dementia, and, above all, in epilepsy. 3rd. Vertigo may present marked variations in type, from slight dizziness to convulsive and apoplectic attacks. 4th. Vertigo may be accompanied with partial convulsive phenomena, psychical symptoms, hallucinations, extravagant and violent acts. 5th. Unconsciousness and amnesia are the rule when the vertigo is of epileptic origin. These symptoms may be absent when the vertigo is of another nature. 6th. Vertigo is more frequent amongst males than females. 7th. It appears to

be due to a general or partial direct or reflex congestive state of the nerve centres. 8th. It may be treated with advantage by saline purgatives and revulsives, abstinence from alcohol when of alcoholic origin, and with alkaline bromides when depending on epilepsy. 9th. Persons acting under the influence of vertigo should be held irresponsible.

[To be concluded.]

ACUTE INFECTIVE OSTEOMYELITIS.

IN the *Fortschritte der Medicin*, Nos. 7 and 8, 1884, may be found an interesting paper on the part played by micrococci in acute osteomyelitis, from the pen of Krause, of Halle, whose researches confirm those of Struck, made in the laboratory of the Imperial Board of Health of Berlin, under the direction of Koch. The pus with which the investigations were made, and which was obtained from nine cases of osteomyelitis in man, disclosed, after careful culture, the usual orange-coloured micrococci, and, in addition to these organisms, in one case, a white coccus, which had previously been described by Rosenbach as occurring in three examples of closed osteomyelitic abscesses, and to which he gave the name *staphylococcus pyogenicus albus*. In the experiments made upon eighteen dogs and seven guinea-pigs, with a view to reproduce the disease by inoculation, the culture-fluid was mixed with two parts of water. Small quantities, whether introduced under the skin or into the peritoneal cavity, were followed by negative results, and the intraperitoneal injection of a larger quantity merely set up peritonitis, without any indications of lesions of the bones. When, however, the bones were broken, an abscess frequently formed at the point of fracture. Thus, of fifteen cases, suppuration ensued in seven after a single injection, while in three others several injections produced a local abscess in the vicinity of the fracture, as well as in the neck of the femur in one. In three, in addition to the abscess at the site of the fracture, there was extensive suppuration of the medulla. In all, the pus, as well as the cultures, contained the characteristic micrococci. The intravenous injection of putrid matter was resorted to in four dogs, in which one of the bones of the extremities had been broken. Abscesses formed in every case at the seat of the injury, but without extensive suppuration of the medulla; and the organisms present in the pus were entirely different from those found in the pus of osteomyelitic abscess. The results of his experiments lead Krause to the belief that the lesion produced at the site of a fracture in the lower animals by the inoculation of the cocci of osteomyelitis is not the same as osteomyelitis of man; and that the cocci of acute infective osteomyelitis of the human subject are merely possessed of extraordinary pathogenic and pyogenic properties.—*Medical News*.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1883-84.

President—PROFESSOR DILL, M.D.

Hon. Secretary—WILLIAM G. MACKENZIE, L.R.C.P. & S. Edin.

An account of a Case of Placenta Prævia and the Treatment. By the
President, PROF. DILL, M.D.

PROFESSOR DILL said: Although the attention of the Society has at different times of late been occupied with the consideration of placenta prævia it may not be altogether unprofitable if we should again pursue the inquiry of that important subject a little further.

I do not now intend to enter upon the discussion of that vexed question—viz., the cause, or the causes, of placenta prævia. I merely mean to advance a few practical hints in relation to the management of a case of this kind, which recently came under my observation, which is not altogether devoid of interest, and which, I hope, may convey some practical information.

On Sunday morning last I was telegraphed for to see a lady in a distant country town. When I reached the house I found that Mrs. A. B. had been ill in labour from the day before, and that she had been attended to by the three physicians of the place. I was met by one of the medical gentlemen, who told me that this was the lady's fourth pregnancy, that she had lost a large quantity of blood, and that as she was in such an extremely exhausted condition it was almost useless for him to return to the room. I, however, was ushered into the lying-in chamber, where I found the two gentlemen hanging over their patient, doing what best they could, anxiously waiting and watching for the end. I made a hasty examination. The face and the lips were deadly pale, the body was covered with cold perspiration. The pulse at times could not be felt, returning at longer and shorter intervals, but with a very feeble pulsation.

I at once lowered the head and shoulders, elevated the hips, and administered a little brandy and milk. As soon as possible I made a careful vaginal examination, and found there was still some loss of blood going on; the os uteri was about the size of a florin piece, and within was distinctly to be felt the placenta all round, but detached and free at its posterior margin, or sacral side. The os and cervix uteri were more rigid than might have been expected, considering the quantity of blood lost and the patient's extremely exhausted condition. And now, although there was in this case more to be feared than to be hoped, yet we agreed upon a definite and a decided course of treatment, and which in the end proved to be effective and successful.

From the first she was sustained with small, and frequently-repeated, quantities of brandy and milk, and added to this she had every hour, or two hours, either ʒij., ʒi., or ʒss. of the liquid extract of ergot. The membranes were at once ruptured. One of Barnes' smaller sized bags was inserted within the os, and it was then inflated by means of an air-pump, and the tampon, formed of handkerchiefs, was carefully introduced until the vagina was completely filled up, and until it projected somewhat from the vulva.

The tampon was now firmly supported by means of a pad, the T and abdominal bandage. Within a couple of hours we saw that our patient was beginning to show symptoms of improvement; the uterus was beginning to contract, as was evident from the recurring pains. At the end of the third hour the tampon and the other appliances were removed. The os had dilated a little further, a bag of a larger size was again inserted, the tampon, pad and bandages were all placed as before. This was done five or six times at intervals of two or three hours, until at last, when withdrawn, it was found that the os had dilated sufficiently to allow the head of a seven months' child to fall through and descend into the pelvis. The foetus was then, with the slightest assistance, easily brought away, the placenta very soon followed, the uterus gradually contracted, and the case gave us no further grounds for anxiety, as far as hæmorrhage was concerned. From this time the patient went on well, and I was informed afterwards that she made a good recovery.

Allow me now to say that, however interesting the relation of a case of unavoidable hæmorrhage may be considered, it is not on that account, neither is it because of the complete success with which our efforts were crowned, that I bring the subject now before you, but that I may direct your attention to the manner in which the tampon in such cases should be used, if we are to expect any good results from it. To act efficiently, the vagina must be well filled, indeed firmly packed, with the material of which the plug is formed, and until it becomes prominent at the vulva; and, as already stated, the pad, T, and abdominal bandage should then be so firmly applied as to produce the necessary amount of pressure.

Thus, with the pressure upon the tampon below, by means of the pad and T bandage, and the pressure which is brought to bear upon the contents of the uterus (the foetus), by means of the abdominal bandage above, you have exerted a force and a counterforce which must, operating and co-operating mechanically upon each other, shut up the mouths of the vessels which lie between the opposing forces so efficiently as to prevent them from pouring out any more blood.

Introduce the plug, as I have occasionally seen it, in a perfunctory manner, it does not serve any good purpose, and it had better be dispensed with altogether; but if introduced promptly and efficiently adjusted, as I have endeavoured to describe the operation, it will be the means of saving many a life.

THEORIES OF COLOUR-PERCEPTION.

DR. SWAN M. BURNETT, of Washington, D. C., elaborately discusses, in the July number of *The American Journal of the Medical Sciences*, the various theories of colour-perception, and points out that none of them accounts in a consistent manner for all the phenomena of normal and abnormal coloured-vision, and that, moreover, there are certain objections on physical grounds which, with our present knowledge of the laws of molecular and wave-motion, are insurmountable. He advances a theory which he thinks meets the requirements of the case in the light of recently acquired knowledge. He holds that it is essential to do away with the idea of the retina as a differentiating organ, and that it should be looked upon simply as a receiving and transmitting structure which shall give up faithfully to the optic nerve the impressions made upon it by the waves of the luminiferous ether. These impressions are carried by the nerve to the brain, and are there properly differentiated and converted into sensations. He believes that by this means all the phenomena of colour-perception and colour-blindness can be explained in a natural and consistent manner, without the necessity of imagining new tissues, or novel or unusual reactions of these tissues to light. Dr. Burnett considers the retina to be a substance whose ultimate structure is such as to allow it to respond at one and at the same time to a large number of ethereal vibrations; at least such a number as shall be represented by the clearly distinguishable colours of the spectrum. His theory, Dr. Burnett holds, explains the phenomena of defects in colour-perception, and receives support from biology and embryology.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F. R. Met. Soc.

VITAL STATISTICS

Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday, October 4, 1884.

Towns	Population in 1884	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	351,014	779	757	196	152	-	-	34	8	9	16	76	98	28·0	5·3
Belfast, -	216,622	522	346	88	43	-	-	15	3	-	9	34	54	20·8	3·7
Cork, -	80,124	148	132	22	28	-	-	5	1	1	-	4	22	21·4	1·8
Limerick,-	38,562	66	50	12	4	-	-	1	-	1	1	2	6	16·9	1·7
Derry, -	29,162	76	49	8	10	-	-	4	-	3	2	1	6	21·9	4·5
Waterford,	22,457	56	40	6	12	-	-	-	1	-	2	1	3	23·2	2·3
Galway, -	15,471	21	31	10	9	-	1	-	-	-	2	1	3	26·1	3·4
Newry, -	14,808	26	13	5	3	-	-	-	-	-	-	1	-	11·4	0·9

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 28·0 per 1,000 of the population annually in Dublin, 26·1 in Galway, 23·2 in Waterford, 21·9 in Derry; the lowest rates are 11·4 in Newry, 16·9 in Limerick, 20·8 in Belfast, and 21·4 in Cork. The rate of mortality from seven chief zymotics ranged from 5·3 per 1,000 per annum in Dublin, 4·5 in Derry, 3·7 in Belfast, 3·4 in Galway, 2·3 in Waterford, 1·8 in Cork and 1·7 in Limerick to 0·9 in Newry. Except in Galway and Waterford there is a perceptible decrease in the general mortality and particularly in that due to zymotic diseases. In Limerick the zymotic death-rate rose from 1·0 to 1·7, but that from all causes fell from 18·6 to 16·9.

The recorded deaths represent a rate per 1,000 of the population annually of 20·4 in twenty-eight large English towns (including London, in which the rate was 17·3), 23·2 in the sixteen chief towns of Ireland, 24·0 in Glasgow, and 17·8 in Edinburgh. There is a decided decrease in the mortality in the English towns generally; and in London it has again fallen considerably—from 20·4 to 17·3 per 1,000 per annum. It

has also once more fallen somewhat in Glasgow; but although still low it has risen in Edinburgh. In the Irish towns the rate of mortality has fallen slightly—from 23·5 in the previous four weeks to 23·2. If the deaths (numbering 18) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 27·4, while that of the portion of the district included within the municipal boundary is 30·2. In London the epidemic of smallpox is still declining, but more slowly—the deaths were 52 against 61, 97, 185, 155, 85, and 46 in the six preceding periods respectively. The deaths from diarrhoeal diseases in the same city, which numbered 1,519 and 836 in the two preceding periods of four weeks, fell to 272.

Acute febrile zymotics were returned as the cause of death in 158 instances in the Dublin district, compared with 206, 99, 76, 62, 84, 82, 71, and 72 in the eight preceding periods of four weeks each, and a ten-years' average of 141·1 in the corresponding period. This group of maladies therefore showed a decidedly lessened mortality, while they were rather more fatal than usual. The 158 deaths included 34 from scarlet fever, 16 from "fever," 9 from whooping-cough, 76 from diarrhoeal diseases, and as many as 8 from diphtheria. The epidemic of scarlet fever still displays a disquieting vitality, the deaths being only one less than in the previous four weeks. Of the 34 fatal cases, 12 occurred in the South City Districts, 5 in the Donnybrook (Pembroke Township) District, and 2 in that of Blackrock. Of the 16 deaths referred to "fever," 12 were ascribed to enteric fever and 3 to typhus, while in 1 instance the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were 5 in excess of those registered (11) in the previous period. Twenty children under five years succumbed to scarlet fever, including only 2 infants of less than twelve months. All the 9 victims of whooping-cough were under five years of age, including 4 infants of less than twelve months old. Among the 76 victims to diarrhoeal diseases were 56 children under five years, and of these 40 had not reached the age of one year. The deaths of 5 persons aged 60 years and upwards were attributed to diarrhoeal diseases.

Measles again caused but a single death in the selected Irish towns. On this occasion the death occurred in Galway.

Scarlet fever was fatal in 15 instances in Belfast, the deaths being 11, 6, 1, 5, 9, 9, 12, and 14 in the eight previous periods. The deaths from this disease fell from 9 to 4 in Derry. Diarrhoeal diseases were credited with 120 deaths in the eight towns, against 207, 57, 14, 26, 24, 32, 24, and 28 in the eight previous periods of four weeks each. In London the weekly registered deaths from diarrhoeal diseases were 126, 86, 90, and 70 respectively.

In the Dublin Registration District 779 births and 757 deaths were registered, compared with 791 births and 765 deaths in the previous four weeks. The births were those of 399 boys and 380 girls. The deaths of infants under one year fell from 213 to 196; those of persons aged 60 years and upwards rose from 182 to 152.

The deaths referred to pulmonary consumption in the eight towns were 192, compared with 182, 197, 243, 216, 244, 243, 212, 220, 189, 170, and 173 in the eleven preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 94 deaths, against 91, 64, 92, 108, 172, 155, 126, 157, 161, 185, and 165 in the eleven preceding periods, and an average of 86·9 in the corresponding four weeks of the previous ten years. The 94 deaths included 61 from bronchitis (average = 56·7) and 11 from pneumonia (average = 13·8). Of the 61 persons who succumbed to bronchitis, 6 were infants under twelve months, whereas 27 had passed their sixtieth year.

On Saturday, October 4, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox or of measles, 40 cases of scarlet fever, 81 of typhus, 12 of enteric fever, and 5 of pneumonia.

The mean temperature of the four weeks was 56·8° in Dublin, 55·5° in Belfast, 58·0° at Roche's Point, Co. Cork, 55·5° at Glasgow, and 58·8° at Greenwich. The maximal readings of the thermometer in the screen were 73·7° in Dublin, 70° at Belfast, 71° at Cork, 71·0° at Glasgow, and 88·5° at Greenwich. This last very high reading for the time of year was recorded on Wednesday, September 17.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of September, 1884.*

Mean Height of Barometer,	-	-	-	29·966 inches.
Maximal Height of Barometer (on 18th, at 9 a.m.),				30·468 „
Minimal Height of Barometer (on 6th, at 9 p.m.),	-			29·114 „
Mean Dry-bulb Temperature,	-	-	-	57·2°.
Mean Wet-bulb Temperature,	-	-	-	54·4°.
Mean Dew-point Temperature,	-	-	-	51·9°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-			·392 inch.
Mean Humidity,	-	-	-	82·9 per cent.
Highest Temperature in Shade (on 9th),	-	-	-	73·7°.
Lowest Temperature in Shade (on 5th),	-	-	-	45·1°.
Lowest Temperature on Grass (Radiation) (on 3rd),				40·2°.
Mean Amount of Cloud,	-	-	-	47·7 per cent.
Rainfall (on 14 days),	-	-	-	1·214 inches.
Greatest Daily Rainfall (on 7th),	-	-	-	·310 inch.
General Directions of Wind,	-	-		S.W., W.N.W., W.

Remarks.

In keeping with the summer months of 1884, September was in all respects favourable. On the 6th, indeed, a deep depression passed over the country, and towards the end a series of low-pressure areas travelling northeastwards outside the western shores of Ireland and Scotland kept the weather in a changeable, showery condition; but in the middle of the month conditions were chiefly anticyclonic, and beautiful autumnal or even summerlike weather prevailed. The mean temperature deduced from the observations taken daily at 9 a.m. and 9 p.m. was 57.2° ; that calculated by Kaemtz's formula from the means of the daily maxima and minima was 56.9° , or nearly two degrees (1.8°) above the average mean temperature, estimated in the same way, for the twenty years, 1865–84, inclusive. On the 9th the thermometer in the screen rose to 73.7° , on the 5th it fell to 45.1° . The rainfall was 1.214 inches, or but little more than one-half the average of twenty years, 2.289 inches. The rainy days (14), however, were nearly up to the average of 14.5. There were two occasions within the past twenty years on which September was drier than in the present year—namely, in 1865 and 1867 (rainfall = .056 inch and 1.176 inches respectively). In 1865 there were only 3 “rainy days.” In Dublin lightning was seen on the evening of the 1st; solar halos appeared on the 25th and 29th, and a lunar halo on the 7th. There was a bright aurora borealis on the 17th. There was more or less fog on the 8th, 10th, 11th, 12th, 17th, and 19th. Very heavy dews were observed in the anticyclonic period about the middle of the month.

Although cool and changeable, the weather of the first week was for the most part favourable in Ireland. S.W. to N.W. winds prevailed, and showers and bright intervals by day were succeeded by clear, cold nights. Early on Saturday, the 6th, a deep depression advanced from S.W. As it did so, the wind shifted to S.E., with an overcast sky and rising temperature, quickly followed by a continuous downpour of rain, lasting for six hours. Two days previously another disturbance had crossed the S.E. of England, causing an unusually heavy rainfall—at Yarmouth 3.59 inches of rain were measured in the 48 hours ending at 8 a.m. of Friday, the 5th.

The record of the second week (7th–13th) was one of change from rain and wind to a spell of beautiful autumnal weather, characterised by bright fine days, and calm, dewy or foggy nights. On Tuesday, the 9th, temperature rose remarkably near Dublin, where at 9 a.m. the thermometer stood at 66.1° , in the afternoon rising to 73.7° , or 5° above the highest reading in London for the same day. This wave of heat subsequently passed on to Scotland.

The period from the 16th to the 20th inclusive was one of splendid summerlike weather. It was preceded by a thunderstorm depression on

the 14th and 15th, which passed off on to the Atlantic in a north-westerly direction. As this occurred the barometer rose quickly and the weather became very fine and warm. At 10 p.m. of the 17th a very beautiful aurora borealis, with white streamers, was seen in many parts of Ireland and Scotland. Next day an anticyclone covered the greater portion of the United Kingdom, light variable airs or calms prevailed, and there was fog or haze in most places. Temperature was very high in central England during this period—a maximum of 84° being recorded at Loughborough, in Leicestershire, on the 17th.

From the 21st the weather, although not unfavourable, was in an unsettled state, with strong squally S.W. to W. winds and occasional showers. This was brought about by the passage of a series of atmospheric depressions in a north-westerly direction outside the western coasts of Ireland and Scotland. At the same time several subsidiary bourrasques passed over the kingdom, causing showers and squalls in all parts of the country. There was a good deal of cirrus and cirro-stratus cloud at this time, and solar halos appeared.

PERISCOPE.

Edited by G. F. DUFFEY, M.D., V.P. and F.K.Q.C.P.

GASTROSTOMY, ŒSOPHAGOSTOMY, INTERNAL ŒSOPHAGOTOMY, COMBINED ŒSOPHAGOTOMY, ŒSOPHAGECTOMY, AND RETROGRADE DIVULSION IN THE TREATMENT OF STRICTURE OF THE ŒSOPHAGUS.

THE frequency of carcinomatous obstruction of the œsophagus in middle life, and of cicatricial, or fibrous, stricture, particularly in subjects of tender years, has led Dr. Samuel W. Gross to collect in the July number of *The American Journal of the Medical Sciences*, the somewhat numerous and scattered instances of the various operations which have been practised for their relief, and elaborately study and compare their relative value and disadvantages. To fulfil this object intelligently he has considered separately carcinomatous and simple strictures. The four operations applicable to *carcinomatous stricture* are gastrostomy, œsophagostomy, internal œsophagotomy, and œsophagectomy, of which the first three are palliative, and the last curative. From the consideration of 194 cases of operative procedure, Dr. Gross finds that gastrostomy has proved to be the simplest, most rational, and safest of the four operations for the relief of carcinomatous stricture. Increasing experience demonstrates that the results are growing better and better, which cannot be said of œsophagostomy; and there is every reason to believe that the successes will become more numerous if it is resorted to as soon as the

diagnosis of the disease has been made, and before the powers of the patient are materially impaired. The few deaths do not constitute an argument against its adoption; while "every recovery is a clear gain; and a fatal issue is simply the natural termination forestalled." The operations which have been practised for *cicatricial stricture* are gastrostomy, œsophagostomy, internal œsophagotomy, combined œsophagotomy, and retrograde divulsion. Dilatation, Dr. Gross holds, is merely a palliative remedy, and sufficient time has not yet elapsed to test the value of divulsion through an opening in the stomach. Combined œsophagotomy for strictures near the cardia is applicable only to children, and may prove of value in strictures impassable by instruments introduced through the mouth. Internal œsophagotomy, if performed at all, should be reserved for comparatively recent and short strictures, and œsophagostomy is applicable only when the incision can be made below the obstruction. Gastrostomy, he holds, is the best and safest operation for simple stricture of the œsophagus. From the great difficulty of managing *cicatricial stricture in children* by dilatation, which is due partly to the struggles of the subjects, and partly to the disinclination of the parents to distress the child, Dr. Gross holds that dilatation should be resorted to only when the inflammation has subsided, and the denuded surface is in a granulating condition. When the constriction is of some standing, and efforts at dilatation prove fruitless, gastrostomy will prove to be the safest and most beneficial operation for prolonging life. Dr. Gross gives elaborate statistics, based on 271 cases, in regard to operative interference for obstruction of the œsophagus.

ON OPENING AND DRAINAGE OF ABSCESS CAVITIES IN THE BRAIN.

THE antiseptic method of operating and after-treatment has not as yet been fully tested in operations upon the brain. This is natural, for not only have we inherited a just dread of dealing with an organ, the large majority of whose diseases are dangerous or fatal, but, our knowledge of the physiological functions of the brain and of their pathological modifications being extremely limited, we are not in a position to form such an accurate diagnosis as calls for surgical interference. Drs. Christian Fenger and E. W. Lee, of Chicago, in an extremely interesting paper on this subject in the July number of *The American Journal of the Medical Sciences*, consider the treatment of traumatic cerebral abscess, and report a case which was successfully treated by opening and drainage. Bergman, in discussing the treatment of cerebral abscess, unhesitatingly sets it down as an axiom that wherever there is an accumulation of pus, trephining is most clearly and indubitably indicated, for the opening of an abscess in the brain is as necessary as in any other part of the body, and we would add even more so. A correct diagnosis of abscess having been made, the further difficulty presents itself of locating it with

sufficient accuracy, so as to be able to find it. A number of cases are on record, in which a correct diagnosis had been made, the trephine also put on more or less at the right place, but the knife or trocar, being passed into the brain, nevertheless missed the abscess. Drs. Fenger and Lee show by their case that this difficulty can be obviated by multiple exploratory aspirations, performed at interstices sufficiently small to prevent any abscess from escaping detection, even if the trephine opening should not have been made at the point of the skull nearest the abscess. There are on record a large number of cases of cerebral abscess, in which trephining was performed, pus evacuated, and temporary relief obtained; but later relapse followed, and a fatal termination ensued. It is possible, judging from the success the practice has met with in the treatment of abscesses in other situations, that drainage of the cerebral abscess-cavity, with or without washing out, would have saved some of these cases, by preventing the reaccumulation of pus and the continuous infection of the surrounding brain tissue, the acute œdema of which is well known to be, as a rule, the final cause of death. As far as Drs. Fenger and Lee are aware, draining and washing out of cerebral abscess-cavities has heretofore not been tried; that it can be effected, and without any detriment to the patient, is shown by their case, the treatment of which they hold strictly conforms to the rational methods of modern surgery in treating abscesses in general; and because of this, and not because their patient recovered, they regard the case as answering affirmatively the question: Is it probable that abscesses in the brain can be treated advantageously on the same principles as abscesses in other parts of the body?

A NEW EARLY SYMPTOM OF LOCOMOTOR ATAXY.

DR. A. PITRES, of Bordeaux, in a communication to *Le Progrès Médical*, of July 12th, states that in a certain number of patients, quite at the onset of progressive locomotor ataxy, undoubted attacks of muscular cramp come on suddenly, without appreciable cause, lasting for some hours or some days, and disappearing without leaving any persistent fatigue. These attacks recur at variable intervals every day, every week, or only at long intervals. The pains that characterise them are not acute, lancinating and movable, as the lightning pains ordinarily are. They consist in a painful sensation of fatigue and muscular stretching, resembling that which occurs in stout people as a consequence of too violent or too prolonged physical exercise, such as fencing, riding, swimming, &c. This sensation is seated in the muscles of the legs or in the lumbo-sacral muscles. It may be so severe as to compel energetic and vigorous subjects to lie down in the middle of the day, and to remain in the dorsal decubitus until the attack terminates. These crises of muscular spasm may be for several years the sole morbid symptom

recognised by the patients. In three cases observed by Dr. Pitres, of which a *résumé* is given, they preceded the appearance of the indubitable signs, and disappeared when these signs developed themselves.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Carbolic Soap Tablets.

MESSRS. M'DOUGALL BROTHERS, of 10 Mark-lane, London, E.C., have presented us with a neat little sample case containing a number of sheets of their carbolic soap (strength, 20 per cent.) for the medical practitioner's waistcoat pocket. We have tried these sheets or tablets, and find them very useful and satisfactory. Each is perforated so as to break into four squares or pieces, of which one is quite sufficient to produce a good lather for washing the hands, and the utility of having a disinfectant soap always at hand cannot be gainsaid—particularly when the physician or surgeon is visiting in the tenement-houses and slums of a large city, where cleanliness is more honoured in the breach than in the observance.

Fluid Carbolate.

MESSRS. M'DOUGALL also advertise a "fluid carbolate," which is a neutral solution of a carbolate and a sulphite, in the proportion of one per cent. each of carbolic and sulphurous acids. It is claimed for this preparation that it combines the excellencies of the acids named without any of their caustic properties. As an antiseptic, healing fluid, and disinfectant it is equally suitable for internal administration or external application. The firm offer the following suggestions for using the "fluid carbolate:"—Internally—For adults, one or two teaspoonfuls in a wine-glassful of water every three or four hours, or more frequently in extreme cases; for children, a third of the quantity given to adults. Externally—It may be mixed with hot or cold water. Lotions—One part of the carbolate to three or six parts of water. Liniments—Mix with glycerine or olive oil in the proportion of one part of carbolate to two of oil. Injections or enemata—One part of the carbolate to five or ten parts of water. As a disinfectant it corrects foul discharges.

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A feeling of propriety makes me unwilling to shirk the duty of offering some remarks to you in concession to established usage; a feeling of respect for this large and influential Section of the Academy of Medicine disinclines me to undertake the examination of any of the great pathological questions of the day, in the presence of an audience comprising many from whom I daily learn of such matters. Not being fortunate enough to be an original worker in the micro-organic world, and having no pretence to suppose that otherwise my individual views would carry any particular weight, I am constrained to pass by the many prominent subjects connected with bacterial and histological pathology.

Mindful of the epithet which Pope applies to those who presumptuously rush in upon hallowed ground, it seems to me more becoming to leave such abstruse questions to those—and I am happy to know they are among our members—who can handle them without spoiling them, and to occupy a portion of your time with some more ordinary considerations, which, however, bear strongly on the scope and objects of our Section.

In considering how may be turned to the best account the synthesis of observation and mutual friction of thought, which may be anticipated here in the coming Session, it occurs to me that more good is likely to result from a cultivation of general than of special pathology—meaning by general pathology the knowledge of the morbid state and of disease in general, and by special pathology the knowledge of individual diseases. The encouragement of general pathology places it within the power of each individual member to contribute something, though it be but a mite, to the common treasury of information; while the elucidation of points in special pathology requires opportunities, facilities, and qualifications which are denied to the majority, and is a process which may at the time possess but little interest for those outside a limited group of students.

Pathology, understood as the scientific interpretation of the phenomena of disease, is not only the necessary basis of the rational art of healing, but is also a requisite part of the intellectual equipment of anyone who aspires to practical utility in even a minor degree.

There are four sources from which the materials of general pathology are chiefly derived—observation at the bedside, experimentation, pathological anatomy, and pathological chemistry.

Clinical observation stands in the most intimate relation to

general pathology ; every step in advance in the former naturally benefits the latter, and *vice versâ*. It is true that complete clinical analysis is possible only in well-organised hospitals, but it is to be borne in mind that a host of questions are to be solved only in private practice, and by the family physician. Unfortunately, the latter is too apt to withdraw from the proper cultivation of science, and to hold the hospital physician responsible for future progress. But clinical pathology is not outside the scope even of the active general practitioner, for progress in this direction will ever be largely due to those who intelligently and studiously investigate disease as it is observed at the bedsides of their patients.

Among the points in clinical pathology which the family physician and general practitioner have peculiar facilities for observing are such important matters as the influence of heredity and of consanguinity ; the incubation periods and the duration of contagiousness in infectious diseases ; the effect of *diathesis* in its relations to renal calculi and gallstones, to the causation of gout, and to the ætiology of non-traumatic hæmorrhages ; the communicability of phthisis, the subject of puerperal toxæmia, and such like. The determination of questions such as these imperiously demands the most rigorous accuracy of observation, otherwise the result is only intensification of the cloud of mystery overhanging them.

Clinical facts are as much facts as are histological or physiological ones. Those who continue to work patiently and laboriously in the mines of clinical pathology, though they may meet with little public recognition or remuneration, will become increasingly competent to estimate the value and utilise the results of other methods of observation, and will have the satisfaction of knowing that their exertions are tending to further the attainment of general pathological truth.

Experimentation is a gateway of knowledge which, in this country at least, has been so tightly locked that the difficulties of advance in the path of experimental pathology are almost insuperable.

Pathological anatomy has exerted an extraordinary influence on general pathology, as much by the reformation of medicine in general as by the discovery of a mass of peculiar histologico-pathological facts. Pathological anatomy was the lever by which the ancient symptomatic medicine was overthrown. It must be considered as not merely the basis of medical knowledge, but also of the

♦

medical art, since it contains all that is positive knowledge in medicine or the foundation of it. It is through pathological anatomy that physical diagnosis has reached its high degree of perfection. The best and busiest practitioners advocate its study, knowing that *post mortem* examinations are the greatest aids to diagnosis we possess. Paradoxical as it may sound, it may be said that he who has completed the largest number of his cases by necropsy is likely to be the best practitioner; or, as Dr. Hughlings Jackson puts it, the best practitioner, though perhaps not the most confident, is he who has carefully made most *post mortem* examinations. Such affections as are not demonstrable by means of the scalpel and microscope are, with very few exceptions, exceedingly obscure.

Pathological chemistry is a line of investigation from which great advances in the next few years may be looked for, especially in the direction of the processes of oxidation and of assimilation. Pathological chemistry has not merely enlightened us upon the subject of many special diseases, such as renal affections, &c., and of general morbid processes, such as fatty and pigmentary degenerations, but it has furnished us with useful knowledge as to the clinical nature of obscure conditions, such as uræmia and diabetes. Thus it has become one of the sources from which the materials of general pathology are derived. The modern treatment of wounds relies to a large extent upon chemical agents, and what is commonly termed antiseptic might in a wider, and perhaps better, sense be called chemical surgery. Medical science is at present particularly interested in the solution of the problems concerning the nature of the causes of infectious diseases, and the character of the processes engendered in the organism by these causes. These latter most probably act after the manner of ferments, and while some of them are doubtless organised, self-reproducing, parasitical bodies, others are regarded as unorganised and shapeless, and in this respect resemble the normal ferments of particular organs in living beings. The proximate and final effects of both kinds of disease-causes upon the body are, in the main, chemical; the ferments decompose materials of the body into substances which either engender increased consumption of oxygen and excessive production of organic heat, or act as poisons upon the nervous and muscular systems.

These are the four principal sources of our knowledge of general pathology; from one or other of these every practitioner can draw,

and can contribute, if not a stone to the temple of science, at least a mustard-seed of information to the general field of knowledge. The number and complexity of the pathological problems still unsolved, the gravity of the interests they involve, the anxiety with which the educated portion of the profession and even of the laity await their solution, are inducements strong enough to kindle a desire in every member of the Section to take some part, however minor, in promoting the common aim and object of our lives—the rational treatment of disease—which advances towards its attainment *pari passu* with the progress of pathological information.

If I may venture to express my own conviction, I would say that from these four sources of knowledge the course which even still promises the best results is the study of pathological anatomy, closely united with accurate clinical observation; or, in other words, the careful study after death of the alterations recognised in cases which have been well observed during life. I know that it may at once be objected that these subjects are exhausted, that this ground has been searched so often that there is nothing more to be found in it, that the works of the great masters, long common property, have left no more to be done with the scalpel, nothing new to be seen with the unassisted eye; but how few are there who really know all that has been done by the great pathological anatomists, and how many have still to learn even macroscopic pathology?

The motto of the Pathological Society of London, "*Nec silet mors*," is still true; the *post mortem* room still continues, from time to time, to make most unexpected revelations when the crucial test of cadaveric inspection is applied to diagnosis; it still continues to be the court of appeal for questions which can be decided before no other tribunal. A vast deal remains to be learned from the dead body; a *post mortem* examination does not always flatter us—it makes us less confident, teaches us to be more careful, and may tell us in unmistakable language that we had been treating a patient with useless, if not injurious, drugs. In individual cases, even when a well-conducted *post mortem* examination is made, it is often difficult enough to determine the exact way in which death has been brought about. Even where we have the most striking anatomical changes, it is not always easy to specify the immediate cause of death. Increase of general pathological experience seems to give the fairest promise of eventually lessening

the number of autopsies which only yield the so-called "negative results."

It may occur to some that the drift of these remarks displays a bias towards the mode of procedure of the old Pathological Society of Dublin, whose glory lay in its cultivation of morbid anatomy. I am not careful to repudiate the impression, and will further take this opportunity of stating that I have always had, and still retain, sentiments of profound respect for that old Society, and the work it did. The latest but one of its long list of Presidents, it would be base disloyalty could I so soon forget its teaching, though but connected with it in its old age, or in what some were inclined to call its stage of senile imbecility. Any rudiments of pathology I am acquainted with were acquired in the dead-house or at the meetings of the Pathological Society of Dublin. The mode of procedure which made that old Society the success it was, and which has caused it to be taken as a model for similar institutions, was, in the main, a combination of accurate clinical observation with careful *post mortem* investigation; and, even at the risk of being thought antiquated and behind the times, I venture to think that this combination still remains as the back-bone of general pathology.

Ætiology, or the knowledge of the causes of disease, is at present one of the weakest chapters of pathology. Inasmuch as from a strictly scientific ætiology flows in a natural way the prophylaxis of disease, the causal conditions of morbid states imply a knowledge which is indispensable to any who claim the power to avert or who hope to avoid them. A larger knowledge in the direction of ætiology will restrict the use of the expression "idiopathic"—a term which, though current and convenient, is but a neat mode of formulating our ignorance with precision.

Comparative pathology is a subject upon which it is to be hoped we shall have much information brought before the Section during the Session. In the past year interesting communications were made by Mr. Abraham on "Arthritis Deformans in the Horse," and on "Scapulo-humeral Dislocation" in an animal of the same species. The diseases of the lower animals have already thrown much light upon human pathology. Sir James Paget stated in his Address on Pathology, at the Cambridge meeting of the British Medical Association (Aug., 1880), that he had long and often felt that we might gain help in the difficulties of human pathology from studying the consequences of injury and disease in the structures of *plants*. The diseases communicable from animals

to man, perhaps, come rather under the cognisance of the Sub-Section of Public Health, the members of which may be called the *pathologists of the social organism*, but they occupy such a relatively important position in human pathology that they have many points of contact with the work proper to this Section. One general principle of great importance has already been brought to light by the study of comparative pathology, which is that while man evinces a strong affinity for animal poisons, the susceptibility of animals to contagion of human origin is but slight.

Among the benefits which the study of comparative pathology has conferred on medicine, there are none more conspicuous than those which will result from a knowledge of the transmissibility of tuberculosis from animals to man. Of all the maladies affecting the domesticated animals tuberculosis is that which is the most wide-spread. The bovine race have a constitutional predisposition to tuberculosis. The influence of heredity has been established, and, as in the case of higher animals, it is most strongly marked when coming from the side of the female parent. Consanguinity increases the receptivity of animals to tuberculosis, and the disease increases with the improvement in, or specialisation of, the breeds of the domesticated animals.

Analysis of established facts shows that, concurrently with centres of tuberculosis in animals, we find more or less numerous cases of tuberculosis in man. The indirect medium of contagion is the flesh and milk which may be often consumed a long way from the locality in which they are produced.

Animal tuberculosis makes its ravages more especially among beasts exclusively destined to furnish milk and flesh, owing to their mode of life being often unnatural as well as insanitary; it is then not surprising that, with the foci of animal tuberculosis in the great centres of human populations, we find a large percentage of phthisis in mankind. It is some consolation to know that the temperature of boiling water kills the *bacillus* of tubercle, but then this temperature is not attained throughout the whole mass of a piece of meat prepared for consumption; the portions insufficiently heated may, therefore, preserve their infective property, and, on the other hand, the germs and spores of the bacillus may resist this temperature and retain their germinative power. Injurious action on the part of milk from tuberculous animals is more easily obviated; milk being a fluid which heats uniformly, it may be

assumed that in boiled milk every specific principle of tuberculosis, as well as the virus, is destroyed. In addition, the milk from different animals is usually mixed, so that the activity of the virus in infected milk is attenuated by its being mingled with healthy milk. Lastly, it should be recognised that the milk of every tuberculous cow is not fatally charged with the contagious principle of tuberculosis, although it has to be admitted that the milk is very infective when the disease is localised in the udder.

Whether tuberculosis is the expression of the full maturation of a predisposition the resultant of many causes, and often bequeathed, or the consequence of infection from a special nosogenic agent, the conclusions which comparative pathology point to should change from indifference to circumspection those who believed themselves entirely exempt from predisposition; while, on the other hand, they will allay the fears of those who suspected the existence of this predisposition in themselves.

Gentlemen, I will conclude these desultory remarks with the expression of a hope that this Session will be one significant of increased exertion and contributory zeal on the part of the members. As I have endeavoured to indicate, it is within the power of the members of the Section to contribute, each from the various sources accessible to him, some item of pathological value. With harmonious co-operation for this end, the meetings may become so profitable that no one will be able to go away without feeling the sensation of having learned something useful, and we may look forward to a prospect as full of benefit and advantage as the retrospect of the two past Sessions, under the rule of my able predecessors, is of interest and instruction.

Trusting that the members of the Section will be disposed to take a lenient view of what I feel has been an unwarrantable trespass on their time and an illegal tax upon their patience, I beg again to offer my sincere thanks for the undeserved honour they have conferred upon me.

ART. XXI.—On Micro-Organisms and Alkaloids which render Food Poisonous.* By CHARLES A. CAMERON, M.D., S.S.C. (Camb. Univ.); Vice-President and Professor of Hygiene and Chemistry, R.C.S.I.; Vice-President, Institute of Chemistry of Great Britain; Examiner in Sanitary Science, Royal University; Medical Officer of Health, Dublin.

THAT abnormal food is a factor in the production of disease and death in man is a fact acknowledged from time immemorial. The divinely inspired laws promulgated by Moses direct that the flesh of animals that have died from disease shall not be used as food. They also prohibit the use of blood as food—a remarkable prohibition, when it is considered that it is chiefly in the blood that the virus of so many dangerous diseases circulates. The writers of the Babylonian Talmud make frequent references to the subject of diseased food, and clearly recognise the difference between the flesh of an animal affected with a specific disease and that of an animal injured by purely accidental causes.

It is only within a very recent period that the particular causes which render both animal and vegetable food unwholesome or actually poisonous have been scientifically investigated. The information gained, though a substantial addition to our knowledge of the ætiology of disease, is still, in many respects, very imperfect. The further elucidation of this interesting subject offers a wide field of inquiry to the microscopist, the chemist, the pathologist, and the biologist.

For the purposes of this address I shall arrange diseased and otherwise unsound food into five classes:—

1st. Vegetable food infested by fungi and other parasites, chiefly microscopic.

2nd. Animal food containing entozoa, or internal parasites.

3rd. Animal food containing micro-organisms endowed with virulent properties.

4th. Animal and vegetable foods containing alkaloids generated during putrefaction.

5th. The flesh of animals affected by specific diseases, the various *materies morbi* of which have not been isolated.

POISONOUS MOULDS.

Ergot, a disease affecting the seeds of the grasses, and especially of rye, is caused by a minute organism, placed by Link and

* A Presidential Address delivered before the Sanitary Congress, Dublin, Oct. 8, 1884.

Berkeley amongst the species of fungi included in the genus *Oidium*. The ergotised grain is very dark, sometimes quite black. These fungi in large doses are poisonous. They cause gangrene of various parts of the body, and even sloughing off of the extremities has been occasioned by them. Some years ago I found that the grasses in a large field near Navan, county Meath, were peculiarly affected with ergot. The animals that grazed in the field lost their horns and hoofs. Many localised epidemics of gangrenous disease have been caused by the use of ergotised grain.

The genus *oidium* includes a species which has often almost annihilated the wine crop of France and other countries.

The moulds or minute fungi which are developed in bread and other vegetable foods are occasionally poisonous. Five species of moulds have been observed on bread—namely, *mucor mucedo*, *penicillium glaucum*, *aspergillus glaucus*, *ascophora nigricans*, and *oidium aurantiacum*. Of these M. Mégnin considers the last-named the most poisonous.* This author cites cases showing the poisonous qualities of mouldy bread.

In Sheffield, in 1879, eight persons were poisoned by eating puddings chiefly prepared in an “eating-house” from bread crusts, the accumulation of weeks, and which undoubtedly must have been mouldy. Two of the affected persons died. The scientific evidence produced at the inquests negatived the presence of ordinary poisons in the food. In the *Veterinarian* for May, 1878, I published an account of the deaths of a large number of sheep and oxen, which I clearly proved to have been caused by eating mouldy food. In the *Dublin Journal of Medical Science* for February, 1879, I have recorded several cases of death and illness in man caused by mouldy food, which I had personally investigated.

The presence of fungi, and probably of algæ, in potable water, occasionally causes the latter to have poisonous properties. Dr. Holdefleiss, in Biedermann’s *Centralblatt* for 1879, insists strongly on the poisonous nature of water in which the colourless algæ occur.

It has been noticed that lake and pond waters often acquire a green colour, which passes away after a few days. This colour is generally due to the development of immense numbers of *oscillaria*, *Euglena viridis*, &c. These coloured waters frequently are sufficiently toxic to kill all the fish in them. Some time ago I had a water of this kind, which on being preserved for some weeks in a

* *Revue d’Hygiene*, Paris, 20th June, 1881.

glass vessel, passed from a green to a magnificent red hue. The change was caused by the oxidation of the chlorophyll formed by the algæ.

A specimen of bluish-green water from Lough Derg, on the Shannon, was sent to me for examination in June last. The coloured water rather suddenly appeared in a creek of the lake, and geese and ducks belonging to several persons were poisoned by drinking it. In this case the colour appeared to be due not so much to algæ as to pigment forming micrococci. These were seen in great numbers, forming colonies or zooglœa. No doubt these micrococci were the poisonous principle of the water.

The flesh of animals affected with parasitical disease is largely consumed. The pig is occasionally the home of the *Cysticercus cellulosæ*. The presence of this parasite constitutes the disease termed *measles* in the pig, but which has no analogy whatever to the malady of the same name peculiar to man. The cysticerci cellulosæ are the immature condition of the tapeworm (*Tænia solium*), a human entozoon, or internal parasite. In the sheep cysticerci are very rare, but I not infrequently meet with them in the ox.

It is stated in many works on Hygiene that 2 per cent. of Irish pigs are infected with measles worms, but I have not found this to be the case during recent years at least. In fact I rarely meet with this disease in the pigs slaughtered in Dublin.

The tænia-forming parasites are destroyed by the thorough cooking of the meat in which they occur.

The "sturdy" of sheep is caused by the presence of a bladder-worm (*Cœnuris cerebralis*) in the animal's brain; and the rot in the same animal and the ox results from the presence of very large entozoa (*Distoma hepaticum*), popularly termed "flukes," in the liver. Unless the flesh of the affected animals be sensibly deteriorated, I think these diseases do not necessarily render the flesh of the affected animals unfit for food.

The *Trichina spiralis* is a small worm found chiefly in the pig, less frequently in man, the cat, rat, mouse, badger, and some other animals. It occurs in two conditions—first, as a worm moving about, barely visible to the naked eye; and, second, enclosed in cysts. The male is about two millimetres, and the female three millimetres, in length. It is said that a single worm will produce more than 1,000 eggs. The free trichinæ penetrate from the intestinal tract through the abdominal wall into the blood and muscles. In the latter they become after a while coiled up in cysts, which ultimately become

more or less calcareous. In these cysts the trichinæ retain for a very long period their vitality. When a portion of the muscle of, say, a pig containing trichinæ is swallowed by another animal, the gastric juices dissolve the cysts and liberate the imprisoned worms. The migrations of these tiny worms from the digestive canal to the most remote parts of the body occasion severe pain, and probably the symptoms have often been mistaken for rheumatic fever. The presence in sufficient numbers of the trichinæ constitutes the disease termed *trichinosis*—a malady by no means uncommon. In Germany outbreaks of trichinosis are frequent, owing to the practice of eating pork, hams, bacon, and sausages almost or altogether raw.

The most recent of the more serious outbreaks of trichinosis is that recorded by Dr. Joesting, of Halberstadt, in the December number of the *Centralblatt für allgemeine Gesundheitspflege*. The flesh of a pig infested with trichinæ was eaten in a raw or smoked state by some of the inhabitants of the little town of Emersleben, on the 18th September, 1883. Three days after the slaughter of the pig all the members of the family of the butcher who killed the animal began to suffer from diarrhœa and other symptoms of the same nature. Soon other cases followed, and up to the 11th of November 361 cases of illness occurred in Emersleben and its neighbourhood, all the patients having consumed portions of the pig. The mortality was high, fifty-seven of the cases having proved fatal. In the bodies of the deceased, trichinæ in great numbers were detected.

Trichinæ in their free state are easily destroyed by heat, but in their encysted condition they resist the action of heat for a longer time. The ova of the parasite are difficult to destroy. It is, therefore, advisable to boil pork, ham, bacon, and sausages much more thoroughly than is usually the case if we desire to secure immunity against invasions of *Trichina spiralis*.

The guinea worms (*Filaria medinensis*) are very long and slender worms, which cause severe cutaneous abscesses. They pass from small crustaceans into water, which, when swallowed by man, introduces the worms into the stomach. These worms are found only in certain tropical countries.*

Dr. Spencer Cobbold, an eminent authority on the entozoa, states that a common mode of the entry of parasites into the human body

* Dr. Thudichum's admirable monograph on the parasitic diseases of animals used as food, furnished as a supplement to one of the Reports of the Medical Officer of the Privy Council, should be read by all who are interested in the subject.

is in salads and other raw vegetables, eaten without having been perfectly washed. Unfiltered water often contains parasites and their ova.

MICRO-ORGANISMS.

Many of the diseases affecting man and the lower animals are caused by very minute organisms, which multiply in the blood and tissues. They are termed micro-organisms, because they are not visible to the unassisted eye. Some of these objects are so minute that 50,000 of them only equal in bulk a cheese-mite.

Air, earth, and water teem with micro-organisms. They are found on our furniture, clothing, food, and bodies. The immense majority are harmless, some are virulent. Some of these micro-organisms are the ova of minute animals, but the greater number are fungi.

A mushroom is a fungus, and, like all of its kind, subsists upon organised matter, and not, as other kinds of plants do, upon carbonic acid gas, water, ammonia, and other mineral substances. Some of the microscopic mushrooms resemble animals in having locomotive powers, and in requiring free oxygen; hence it has been contended that they are animals. These organisms are not only on the confines of the visible world, but they are also on the borderland which divides the two great organic kingdoms of nature—the animal and the vegetable. A chain, each link of which is somewhat differently fashioned, passes through each of these kingdoms; it may be that these micro-organisms are the links by which these chains are united and made continuous throughout the animated world.

The micro-organisms occurring in animals and vegetables, which I propose to consider in connexion with the subject of fermentation and disease, are almost universally regarded as fungi or moulds. They can generally be examined by means of a microscope capable of magnifying about 400 diameters linear. They occur in flesh, blood, organic liquids—such as broth—water, &c. They are more readily identified in muscle, &c., by treating the latter with solution of some anilin dye. The micro-organism acquires the colour of the dye, whilst the muscular tissue remains unstained. Ether, and acid and alkaline solutions, which dissolve or alter the form of pus and fat corpuscles and other microscopic objects likely to be mistaken for micro-organisms, have no effect upon the latter.

CLASSIFICATION OF MICRO-ORGANISMS.

Cohn arranges these micro-organisms according to their forms into the following groups:—Sphærobacteria (having globular or oval shapes), Microbacteria (very minute rod-shaped cells), Desmobacteria (long and comparatively large rod-like cells), and Spirobacteria (spiral cells). It is clear, then, that Cohn includes all these organisms under the general term—bacterium. They have, however, a very extensive nomenclature, and the term bacterium is now generally restricted to short cylindrical organisms. The simple round or oval cell is termed micrococcus, those with a ribbon-shape bacilli, and the spiral-shaped are divided into two groups—spirochus and spirillum. The micro-organisms, which are supposed to cause disease, chemical changes, &c., have names given to them which I shall mention further on.

MICROCOCCHI.

The chemical composition of micrococci, &c., is peculiar. Unlike plants in general, they contain very little cellulose or starch. Their albuminous constituent is, according to Von Nencki, a peculiar body, which he has named myrcoprotein. The thin cellulose covering of the cells is readily shown by treatment with dilute sulphuric acid and iodine, which develops a blue hue. Most species of micrococci are very minute, but one kind, *Micrococcus prodigiosus*, which sometimes colours snow red, consists of comparatively large cells. In liquid and tissue the micrococci are met with, in strings like beads, isolated, in the shape of dumb-bells, and in masses (*zooglæa*), cemented by a gelatinous substance; they multiply by division, and it has been computed that a single micrococcus may, within twenty-four hours, produce more than sixteen millions of its kind!

The micrococci are not the most harmless of the micro-organisms. They have been found in connexion with pneumonia, diphtheria, endocarditis, scarlet fever, puerperal fever, vaccinia, small-pox, and erysipelas in man, and in the cattle plague and bovine pleuropneumonia. The causal connexion of micrococci with any one of these maladies has not been as yet conclusively proved, except perhaps in the case of erysipelas. That some species are virulent has, however, been clearly shown by Friedlander and Frobenius and others.

According to Dr. Frank Ogston, of Aberdeen, inflammation is,

except in cases of such injuries as burns, always caused by micrococci.

The powerful chemical action of micrococci has been placed beyond all doubt. The phosphorescence of fish and the production of mucus in wine have been traced to their agency. They have wonderful powers in forming pigments, provided they have free access of air.

The septic micrococci are very numerous; they are found in all kinds of putrefying organic matters; I always meet with them in foul water.

The disease termed *pébrine* affecting silk worms is caused by a species of micrococcus. Pasteur has suggested a successful method of protecting the worm against the ravages of this pest.

BACTERIA.

The bacteria of Cohn may be regarded as slightly more organised than the micrococci. They occur as cylindrical rods or oval cells. They seldom form chains, but are found in colonies (*zooglæa*). Having a flagellum at one or both ends, they have motile power, and their movements are very lively. They multiply by division. They are often so numerous in infusions that they form a thick pellicle or scum.

The *Bacterium termo* is found in putrefying organic matter. There is every reason to believe that bacteria are the cause of the decomposition. A large species—*Bacterium lineola*—occurs in water and in various organic infusions. The movements of these bacteria are rapid.

The bacterium *termo* probably plays a useful part in the economy of nature. It causes a gradual and innocuous retrograde metamorphosis of organic matter, resulting in its reduction to water, carbonic acid, ammonia, and nitrates—the inorganic food of plants.

A bacterium in milk transforms its sugar (lactin) into lactic acid. Another, *Mycoderma aceti*, is the cause, according to Pasteur and Cohn, of the acetic acid formation. Several pigments are developed by them. The disease affecting the domestic fowl, and termed fowl cholera, is declared by Semmer, Toussaint, and Pasteur to be due to the presence of a species of bacterium in the blood and tissues of those animals. And Davaine and Koch have induced septicæmia, or blood-poisoning, in animals by inoculating them with bacteria derived from decomposing organic matter.

The term *microbes* is sometimes applied to the bacteria and other minute organisms alleged to cause disease.

THE BACILLI.

We now come to perhaps the most formidable of the micro-organisms—the bacilli. They are cylindrical, rounded or square at their extremities, and many have flagella which enable them to move about. Some of the rods, or strings rather, are of great length; they are termed *leptothrix*. Unlike the micrococci they form spores. They also multiply by transverse division.

A species of bacillus causes the rancidity of butter by producing butyric acid, but it discharges a useful part in the ripening of cheese. Upon cellulose, a substance not readily amenable to chemical solvents, it exercises a potent influence, causing it to break up and become soluble in the digestive fluids of the stomachs of the ruminants. This bacillus may, with almost absolute certainty, be found in the stomachs of these animals.

The hay bacillus (*Bacillus subtilis*) consists of rods of from 0·002 to 0·006 millimetre in length, and from 0·002 to 0·003 millimetre in thickness. They combine to form rods or filaments, some of which are of great length. They form spores about one-half the size of a bacillus, but the spores are not stained or affected by dyes. Although this organism is called the hay bacillus, it is almost invariably to be met with in all decomposing nitrogenous organic matters.

Several non-motile species (*Bacillus septicus*) are found in putrid blood and other albuminous matters. I have seen them in sediments from water. They can exist without air. They occur occasionally in the bodies of dead animals.

The term *pathogenic bacilli* has been applied to certain species which are believed to be the cause of specific disease in man and the lower animals, or which at least must be admitted to be in some way intimately associated with the disease.

Koch, of Berlin, has discovered a bacillus in the bodies of persons who had died from Asiatic cholera, and in pond water tainted by choleraic egesta, a comma-shaped bacillus, which he believes to be the actual cause of the disease. The bacilli were compared with other bacilli found in the intestinal tracts of persons who had died from dysentery and other diseases affecting the alimentary canal, but they were quite different from the cholera bacilli. The latter are possessed of locomotive power, and

they are capable of reproducing themselves outside the human body.

All attempts to induce cholera in the lower animals by introducing the comma-shaped bacilli into their systems failed, but it has long been known that this disease is not met with in the lower animals. Two important observations were made by Koch—namely, that the comma-bacillus, or cholera microbe, is easily killed by desiccation, and that weak acid solutions, which have no appreciable effect upon other kinds of bacilli, greatly retard the development of the cholera microbe. It might therefore be advisable, should cholera invade these countries, to make vinegar or lemon-juice a constituent of every meal. Koch's theory of the causation of cholera has not as yet been universally accepted, but it cannot be shown to be untrue by other than experimental proofs.

Dr. T. R. Lewis, of Netley, has quite recently announced (*The Lancet*, September 20th, 1884) that he has discovered in the mouths and fauces of healthy persons comma-shaped bacilli, which re-acted with dyes exactly like Koch's bacillus. He has not, however, shown that they behave identically under cultivation. His observation is, however, an important one.

The conditions affecting the life-history of the cholera bacillus favour the theory that cholera is spread by means of polluted water. We have it on the high authority of Surgeon-General De Renzy* that in India impure water is the principal vehicle in which the poison of this dreadful malady is spread. Dr. C. Macnamara, in his excellent work on "Cholera," refers to the presence of vibriones in immense numbers in water known to contain the *materies morbi* of cholera. In 1866 I examined the water-supply on board the ship "Olive," lying in the River Liffey. I found that it teemed with micro-organisms, and that it was enormously polluted. An outbreak of cholera had taken place on board the vessel, due no doubt to the bad quality of the water used by the crew. There is, in short, an extensive literature relating to outbreaks of Asiatic cholera, ascribed to the use of infected water. Should the disease invade Dublin next year, we shall certainly be in a good condition to oppose its progress so far as a pure and abundant water-supply constitutes a defensive armour. I fear, however, that this kind of armour is wanting in the great majority of Irish towns.

According to Pasteur, a micro-organism is the cause of hydro-

* Reports on the Sanitary Administration of the Punjab for 1868 and 1869.

phobia. He is now engaged in the investigation of this microbe, and hopes to be able to "attenuate" its virus, so as to produce a hydrophobic vaccine, if I may use the term. Should he be successful, we may hope for the extirpation of one of the most dreadful diseases to which man is liable.

Klebs and Tommasi-Crudeli, and Lanzi, and Terrigi, assert that they have isolated the micro-organism of malarial fever.

According to Schütz and Löffler, Bouchard, Charvin, Wassilieff, and others, peculiar bacilli, resembling those of tubercle, are always found in connexion with glanders. Animals inoculated with them have contracted the disease.*

Several observers claim to have discovered peculiar microbes in connexion with typhoid fever. In the biological department of the Health Exhibition, now going on at South Kensington, a small oval bacillus, supposed to have some relation with typhoid fever, is shown under a microscope.

Neisser and Hansen have shown that minute bacilli are always to be found in the large cells in the nodules of leprous patients. They are less than 0.001 millimetre in thickness, and have pointed extremities.

That the terrible disease popularly known as consumption, and termed by pathologists tuberculosis, is contagious, seems now to be generally admitted. The cause of the disease is the introduction into the body of a species of *bacillus*, which Koch, its principal investigator, has termed *Bacillus tuberculosis*. It is pod-shaped, and about the same size as a blood corpuscle. It is almost always solitary, seldom occurring in pairs, and never in colonies. It has no motile power. It produces spores. The bacilli tuberculosis are met with in large numbers in the tubercles in the lungs of persons who die from phthisis. The results of Koch's investigations have, since the publication of his inquiries in 1882,^b been fully confirmed, and we must now place consumption amongst the contagious diseases. I may remark here that from early times there has been a popular belief in the infectiousness of this disease.

Knowing that the presence of a peculiar bacillus in the lungs indicates true tuberculosis, we may differentiate between tuberculosis and diseases which might for a while be mistaken for it by examining microscopically the patient's sputum, or matter ejected

* See Deutsche med. Wochenschrift, 52, 1882, and 11, 1883; also Revue Médicale Française, Dec., 1882.

^b Berliner klinische Wochenschrift, No. 15, 10th April, 1882.

from the lungs in coughing. A little of the sputum is placed on the object-glass and rapidly dried over the gas or spirit-flame; the film is then soaked for fifteen minutes in a solution composed of 100 parts of a saturated water solution of anilin oil, and 12 parts of a 2 per cent. water solution of gentian blue. A mixture of 1 part of nitre and 2 of water is now applied for a second or two to the preparation, after which it is washed with distilled water. Finally, it is stained by immersion for fifteen minutes in a solution of 1 gramme of Bismarck brown in 10 cubic centimetres of spirits of wine (specific gravity .830) and 100 cubic centimetres of distilled water. The blue stains only the bacilli, and the brown only the other substances, so that the contrast of colours makes it easy to identify the terrible micro-organism—the probable slayers of millions of mankind.

A characteristic bacillus has been found in the lungs of monkeys dead from phthisis, for these animals appear to resemble man in their diseases as well as in their anatomical structures. In the tubercles found in the lungs of the ox, bacilli have also been detected. Koch has inoculated these and other kinds of animals with tubercular matter from man or the ox, and has found that the bacilli of the tubercle produced both bacilli and tubercle in the infected animal. Of course no one would try the experiment of inoculating man with the tubercle of the ox, but there is the strongest reason to believe that the terrible disease—tuberculosis in man—sometimes results from eating the flesh or drinking the milk of tuberculous cows. Dr. Charles Creighton, of Cambridge, in a remarkable work on “Bovine Tuberculosis in Man,” published in 1881, stated that he believed an organism would yet be detected in tubercle—an organism which would probably have a family likeness to some other microbe organisms. Koch has detected the organism, and has shown that it is but one of the many varieties of the bacillus family. He has verified the theoretic assertion made long ago by Cohnheim, that tubercles result only from imported infection.

Klebs and Gerlach stated in 1868 that the milk of tuberculous cows was a common cause of tuberculosis in man, especially in children. Since then the question—Is tuberculosis transmissible to man through the media of meat and milk? has been much discussed, the result being generally in the affirmative. Koch's contribution seems to me to have settled the matter, whether we hold with Schüppel that human and bovine tubercle are identical,

or with Creighton that they are morphologically dissimilar, though man may become infected with tubercle from the ox.

Dairy cows are rather liable to tubercle. I always condemn the carcasses of animals affected with phthisis of a pronounced kind. The disease, popularly called the grapes, in cows, is tuberculosis. The membrane lining the great cavity of the animal is often almost completely covered with grape-like masses of tubercle. It requires very thorough cooking to destroy the bacillus of tubercle. Should there be any suspicion as to milk not being derived from a healthy animal, the safer plan is to boil it before using it.

The *Bacillus anthracis* and closely allied species occur in oxen affected with the so-called splenic fever, black-leg, or quarter evil, and the gloss anthrax; in sheep suffering from the carbuncular cynanche, the hæmorrhoidal anthrax, and the gangrenous erysipelas, and in the malignant boil of the pig. It is evident that the flesh of animals affected with such diseases should not be used as food for man.

SPIROBACTERIA.

I shall now briefly notice the vibriones and spirilla. One of the most interesting of the disease-producing spirilla is that causing relapsing fever in man. It is called after its discoverer, *Spirillum Obermeieri*. These organisms are minute wavy threads, which appear in great numbers in the blood during the paroxysms of the fever, and almost completely disappear when the fever subsides for the time. Relapsing fever is also termed "hunger" fever, as it often prevails during famines.

Several kinds of spirilla are found in putrefying substances, and no doubt exercise a septic action. The vibriones are also septic; they are curved rods, which exhibit rapid movements.

The coloured substances formed in paste, water, &c., are often caused by spirilla. One species is found in the tartar of teeth.

METAMORPHOSIS OF MICRO-ORGANISMS.

Experiments have been made for the purpose of ascertaining—first, whether or not the artificial cultivation of harmless bacteria and micrococci might be conducted as to render them pathogenic or disease-giving; and, second, whether or not the cultivation of pathogenic organisms might not be so managed as to moderate or destroy their virulence. As to the first of these attempts Hans Buchner asserts that he converted the harmless hay bacillus into

the deadly anthrax bacillus.^a According to this author it is not so much the original nature of the micro-organisms as that of the medium in which they are developed, which determines their pathogenic power. He cultivated the hay bacillus in defibrinated blood, maintained at a temperature of 36° C., and found that after a few generations the descendants of the innocuous bacteria acquired virulent properties. When introduced in small numbers into the blood of a healthy animal they appeared to cause its death, and the *post-mortem* appearances were similar to those of poisoning by anthrax bacilli.

Koch asserts that Buchner has not changed the nature of the hay bacillus. He points out that the material first used by Buchner for his cultivation was egg albumen which had not been sterilised, and which, therefore, might have contained the bacilli which gave rise to malignant oedema. These micro-organisms are not uncommon in putrefying organic substances. They develop rapidly in the blood, in which liquid the hay bacillus languishes. Koch and also Klein, therefore, are of opinion that Buchner introduced into the blood both kinds of bacilli, and that the hay bacilli soon died out, whilst the other kind multiplied under conditions so favourable to their growth.

With respect to the conversion of baneful into innocuous or comparatively innocuous micro-organisms, Pasteur claims to have accomplished that triumph; so also do Buchner, Toussaint, Koch, and others.

The blood of animals affected with splenic fever invariably contains great numbers of bacilli. As this fever is termed malignant anthrax, these organisms have been termed *Bacilli anthracis*. They resemble hay bacilli, but they do not move about. They consist of rods which divide and elongate into straight or curved filaments. They produce spores. A single bacillus measures from 0·005 to 0·02 millimetre in length, and from 0·001 to 0·0013 in thickness. Dyes affect the bacilli, but not their spores. The bacilli differ slightly in form in different animals. They can exist for a long time external to the bodies of animals, and are often present in pastures. The fatal malady affecting man, termed Wool-sorters' disease, is caused by the spores of the anthrax bacillus, which are occasionally attached to wool or horse-hair, making an entry into the body.

Pasteur asserts that by cultivating anthrax bacilli in chicken

^a Ueber die experimentelle Erzeugung des Milzbrandcontagiums aus den Heupilzen.

broth kept at a temperature of from 42° to 43° centigrade, they gradually lose their virulence. The bacilli which appear at the expiration of twenty days of cultivation may be safely injected into the blood of sheep or oxen. The animals generally sicken slightly, but they afterwards appear to enjoy immunity from anthracoid diseases. Pasteur now prepares a vaccine (*vaccin charbonneux*) as a protective against splenic fever. It is largely sought for by the stock owners of France, and it is said that the demand exceeds the supply. By a similar process he moderates the virulence of the microbe which causes fowl, or chicken cholera.

Klein has made many experiments with the view of "attenuating," as the term is, the virulence of the anthrax bacillus, but on the whole his results have not confirmed those arrived at by Pasteur. So far as relates to the protective or vaccine influence of the "attenuated" bacilli, Koch, who so frequently dissents from Pasteur's conclusions, agrees with him that the continued cultivation of the anthrax bacillus lessens its pathogenic power. Koch, Gaffky, and Löffler have recently made experiments which also confirm Pasteur's statement that the anthrax bacillus can, when "attenuated," be cultivated for months or years without further change, or reversion to its original virulence. Koch and Klein agree that the spores of the bacillus are not formed within the blood.

Some interesting experiments with the bacillus subtilis have recently been carried out by Dr. G. Vandevælde. The results appear in the current number (Tome V., Fascicule I.) of the *Archives de Biologie*, published in Ghent, Belgium. This author's researches have convinced him that the hay bacillus can exist as a ferment for a rather long period. According to Cohn, it can, when cultivated in an atmosphere free from air, evolve from certain bodies butyric acid, but Hans Buchner did not notice any fermentative action produced by it. He quotes Prazmowski's similar experience. Prazmowski introduced spores of bacillus subtilis into glass tubes, half filled with fermentiscible liquors, boiled and sealed. In these he could find neither bacilli nor fermentation product. But this does not prove that the bacillus subtilis cannot play the part of a ferment; for according to Brefeld and Hoppe-Seyler's researches, free oxygen is indispensable to the development and reproduction of this bacillus, and Vandevælde's culture of it in meat extracts confirms these authors' opinions. The same authors have shown that beer-yeast does not multiply without free oxygen; and Hoppe-Seyler goes so far as to

say that the same holds good for all the micro-organisms of the group of schizomycetes, and the analytic results of Vandeveld's operations with the hay bacillus confirm that fact. Therefore, to obtain analytical results, it is evident that the bacillus must have time given to it in order to its development, and that afterwards it must play the part of a ferment to live without the presence of oxygen. It is not till after four or five days (Prazmowski seems to have expected results within four or five days), even when the culture has been carried on in sealed tubes, that products of fermentation may be expected. Prazmowski mentions that when he allowed a small quantity of air into the vessels, the bacillus was developed, but formed only a very thin crust on the surface of the liquid, which became very thick when the air was freely admitted. All this is perfectly consistent with the principle that for the phenomena of development and reproduction free oxygen must be present, and that they take place in proportion to the quantity of air admitted.

Chamberland's experiments, carried out on the same principles, led to the same conclusions. The same objections apply to his experiments as to those of Prazmowski—that is to say, too short a time allowed for the development of the bacillus.

Vandeveld's experiments relate to the modification effected in the bacterium subtilis in meat extracts. The bacilli were obtained by Robert's and Buchner's methods—namely, by immersing hay in water for four hours, bringing the resulting fluid to specific gravity of 1004, and, after neutralising the excess of acid, half filling litre-flasks, closing with wadding, boiling, and cooling, at a temperature of 36°C, for thirty hours. When the culture was applied to meat extracts of a strength of 2·5 grammes, 5 grammes, and 10 grammes to 500 cubic centimetres, the following results were obtained:—The liquid, clear at first, became turbid after twenty-four hours, but after forty or forty-eight hours regained much of its clearness; at the same time a crust, grayish white and opaque, was observable at the top, decreasing in thickness from the strongest solution to the weakest. This gray layer, after thickening for some time, became more shiny and presented a surface more uniform. Soon this broke up and fell to the bottom. After the disappearance of the first layer a second sometimes formed, very thin and transparent. After three weeks, if a small quantity of the liquid be taken at any depth, the microscope reveals the presence of bacteria throughout the whole liquid. Mr.

Vandevelde interprets those facts in the following manner :—The bacillus lives and multiplies during the first days at the expense of the oxygen dissolved in the liquid. When this is exhausted it rises to the surface and lives by absorbing the oxygen. But, according to Hoppe-Seyler, in liquids at rest and in fermentation the superficial layer only contains oxygen. What becomes of this layer when there is a crust one and a half millimetres thick? The superficial portion of this crust absorbs a large quantity of oxygen and prevents its access to the lower strata; there the bacillus can neither multiply nor develop itself, and to live has to produce its own heat at the expense of fermentiscible substances. Soon the crust breaks up and falls to the bottom, dies, and remains there. Another portion comes to the top and forms a new crust, and a third exists as a ferment and floats in the liquid.

Dr. Vandevelde comes to the conclusion that the bacillus subtilis may for a certain time play the part of a ferment, and that if the experiments of Buchner are confirmed, the transformation of the bacillus subtilis is nothing more than the transformation of an organism incapable of living but for a short time in an atmosphere free from oxygen into another which can for a while produce the heat required for its existence by decomposing fermentiscible substances.

DISEASE PRODUCED BY PUTRID FOOD.

Food in a putrid state or in an incipient condition of decomposition often produces forms of *septicæmia*, or blood-poisoning, of which the most common symptoms are choleraic. The toxic nature of such food seems to be due to two classes of principles—first, to the presence of micro-organisms of an infective character; second, to the spontaneous generation of crystalline principles resembling the poisonous alkaloids, such as strychnia, veratria, &c.

As to the micro-organisms, but little is known of them. I have already referred to the poisonous moulds, but it seems likely that the bacteria or bacilli in putrid food occasionally cause the illness which decomposing food sometimes produces. Nor is this poisonous food always sensibly putrid; it often has but the faintest mouldy odour. This is especially the case with preserved food, such as tinned lobster, &c.

In 1880, 72 persons who had partaken of beef and ham sandwiches at Welbeck, Nottinghamshire, suffered from choleraic symptoms. Some of the affected persons died. Dr. Ballard attributed the illness to the use of the ham, and portions of

it submitted to Dr. Klein were found to contain a hitherto undescribed bacillus which proved to be virulent.

Many cases of illness, apparently arising from the use of diseased or putrid meat and other kinds of unsound food, have come under my observation. In August, 1883, near Taghmon, in the county of Wexford, a sick cow was slaughtered and its flesh was consumed by forty-nine persons. It was believed that the animal suffered only from the dry "murrain," merely a kind of indigestion. Twenty-nine of the persons became very ill, and two of them died. The symptoms were similar to those observed in cases of illness from eating putrid sausages. I investigated the case, and came to the conclusion that the cause of death was septicæmia from eating food in a decomposing state. I found that all the persons who had eaten the meat fresh and hot were unaffected, but that all who had partaken of it cold and after it had been kept for some time became ill. In this case the state of disease—simple as it was—favoured the rapid decomposition of the meat. I have always noticed that the flesh of diseased animals soon becomes putrid. In the Wexford case it was surmised that the cow might have had splenic fever; but I did not detect any anthrax bacilli in its flesh, though it contained immense numbers of micrococci and bacteria. These probably acted as septic organisms merely.

PTOMAINES.

The term ptomaines has been applied to crystalline principles resembling the alkaloids (strychnia, veratria, &c.) found in the dead body, in putrid flesh, and, but less frequently, in decomposing vegetable matter. They have been investigated by W. B. Richardson, Marquardt, Panum, Bergmann, Schmiedeberg, Selmi (especially), Schmidt, Pouchet, Brieger, Poeh, Giacomelli, and other chemists, but much remains to be known concerning them. That they occasionally cause illness, and even death, seems probable.^a In the putrefaction of Indian corn a ptomaine was found by Lombroso and Erba which acted like strychnia. The poisonous properties which sausages, fish, and other foods occasionally exhibit are probably due to ptomaines, not to fungi.

A poisonous alkaloid from toxic mushrooms has been isolated. It is termed *muscarine*. A very small quantity proves fatal to animals.

Dr. Dupré, of London, extracted a ptomaine from a portion of some sausage which had poisoned a number of people.

^a Pouchet assigns to one of the ptomaines the following formula :— $C_{17}H_{14}N_4O_2$.

CONCLUSION.

The subject of the fitness of the flesh of animals affected with contagious pleuro-pneumonia, rinderpest, foot-and-mouth disease, and other maladies resulting from blood-poisoning, I do not propose to consider at present. I have published several papers on this subject, which has also been thoroughly threshed out by Dr. Vacher, the able Medical Officer of Health for Birkenhead. These diseases are no doubt the results of the introduction of micro-organisms into the system, but the various *materies morbi* of these maladies have not been clearly identified. The milk of animals affected with foot-and-mouth disease has been proved to produce illness when drank uncooked. The milk of even healthy animals often becomes the vehicle of spreading such diseases as typhoid fever, scarlet fever, and probably diphtheria. In this city a few years ago I traced the cause of the illness—fatal in six cases—of 65 persons to the use of milk supplied from a dairy, the owner of which had fever. The numerous outbreaks of disease which have been caused by the use of infected milk, and the strong evidence showing the evil results of the use of the flesh of diseased animals, are sufficient reasons to warrant the systematic and skilful examination of the food prepared or being exposed for sale. The reason for such examination is all the stronger when we consider that food is liable to be the abode of those organisms and alkaloids, the deadly nature of which I have briefly and imperfectly discussed in this address.*

ART. XXII.—*On the Nature and Prevention of the Graver Fevers of Childbed.* By WILLIAM C. NEVILLE, M.A., M.D., M.A.O., Univ. Dubl.; late Assistant-Master, Coombe Hospital; Physician to the Pitt-street Institution for Diseases of Women and Children; Secretary, Obstetrical Section, Academy of Medicine in Ireland, &c.

[Concluded from page 402].

I VENTURE on one criticism of Dr. Macan's method. He appears to me to have attached a somewhat exclusive and extreme importance to preventing students engaged in dissecting attending the

* Since the foregoing was written, Klein and Ray-Lankester have published papers strongly combating the statement that the comma bacillus is the immediate cause of cholera.

hospital. In itself I consider this precaution a valuable and necessary one. But it seems even more essential to supplement this rule by one preventing students in attendance upon the hospital from serving at the same time as "dressers" of surgical cases—which include sloughing wounds, phlegmonous inflammations, erysipelas, &c., in general hospitals. The evidence that the infective fevers of childbed are frequently due to contagia brought from one of the sources just mentioned is much greater than that which indicates ordinary cadaveric poison as a cause. It is very likely that recent methods of preserving dead bodies for purposes of dissection may have greatly lessened the risks associated since Semmelweiss' time with this particular source of infection. Certain, at least, it is that the cadaveric poison of a dissecting-room is not nearly so virulent as that which may be carried from the *post mortem* examination of a body recently dead of an acute infective disease. Regarding, moreover, the special liability of puerperæ to some of the zymotic fevers, especially scarlatina, it is very questionable whether students should be allowed to attend general and maternity hospitals at the same time. And, in a matter like that under consideration, it cannot be contended that the interests of the patient should be allowed to suffer on account of those of the student.

I pass on to consider the question of prophylaxis as it relates to private practice.

I have stated that the physician should be willing to accept full responsibility for the well-being of his patient. But such acceptance must be made plainly conditional upon his being given absolute control over the *personnel* and every detail of the lying-in room. Above all, he should be entrusted with the selection of a nurse, so that she may regard him as her employer, to whom she must be directly answerable for the proper performance of her duties in accordance with his directions. Nothing can be more unsatisfactory or injurious to the proper management and *morale* of the puerpera than the kind of dual control, shared between the physician and the nurse, which is so commonly established about her.

It is indisputable that, in a large number of cases, the infection of puerperal fever originates with the nurse; and I do not know how this source of danger can be avoided so long as midwives can obtain their diplomas without understanding the nature of infection, or the measures which it is right to take if its occurrence is to be guarded against. How else can they intelligently aid us in the practice of aseptic or antiseptic midwifery? Before going to a

labour patient, with how many forms of infective material may she not—more from ignorance than will—have had recent contact; and if she does not regard herself as our employée, what certain reliance can we have upon her faithful adhesion to the details of a fitting personal disinfection and general asepticism? The entire question of the education of midwives, and of their relations to medical men, is a crucial one in connexion with the question under consideration, but it is one over which it is impossible to linger in the present paper, in which I have only indicated its main issues. But in this, as in other questions, reform should commence with ourselves; for it is impossible to feel surprise that comparatively uneducated nurses should often prove the carriers of infection so long as physicians may be found who, presumably with all the evidence before them, still practically accept the accidental or providential origin of these diseases.

With a view to minimising the risks of infection at the hands of nurses, I have drawn up the following memorandum for their use:—

“Puerperal fevers arise in the majority of instances from infection by the nurse or doctor during labour or the puerperal state. With a view to making the risk as slight as possible, the nurse is required to adopt the following precautions during labour:—

“For the purposes of thorough disinfection she will find ready for use in the patient's house—

“1. CARBOLISED VASELINE,^a for anointing fingers, &c., during examinations.

“2. PURE CARBOLIC ACID.—One ounce to a pint of hot water makes solution for disinfecting metallic instruments.

“3. DISINFECTANT FLUID.^a—Solution of Hydrarg. Perchlor. (1:100)—POISON.

“The nurse should not have been in close contact for a week, at least, with any diseases such as erysipelas, diphtheria, scarlatina, typhus, puerperal fever, &c.; nor should she have recently dressed, or had anything to do with foul wounds, sloughing or gangrenous

^a The formulæ used are:—

OINTMENT.—R.			
Acid. carbol.	.	.	3 ss.
Iodoform.	.	.	3 iss.
Ol. Eucalypt.	.	.	3 ss.
Vaseline	.	.	3 i.
DISINFECTANT FLUID.—R.			
Hydrarg. perchlor.	.	.	3 ss.
Aquæ	.	.	3 vii. Solve.
“POISON.”			

sores, foetid lochia, or any dead putrescent animal matter. She is to wear washing clothes during her attendance.

“ Before making any vaginal examination she is to disinfect herself as follows:—The hands and forearms are to be thoroughly cleansed with soap and water, the nails especially being scrupulously cleaned with a nail-brush. Afterwards the same parts are to be immersed in and sponged with a solution made by adding one ounce of the disinfectant fluid to a pint of water in a basin. The vulva and perinæum of the patient are to be sponged with the same solution, and the necessary examination then made with the fingers anointed with the carbolised vaseline.

[“ *Caution.*—The disinfectant fluid is very poisonous, and care must, therefore, be taken not to rashly leave it about or uncorked. It cannot be used with any metal instruments, which it rusts and corrodes. A pint of the disinfectant solution, made as directed, should be kept in a basin reserved exclusively for this purpose. In this basin a vaginal tube, a male, No. 10, gum-elastic catheter, and a couple of perfectly clean new sponges, may be constantly kept ready for use if required. When once made, this solution need not be changed during labour, provided due care is taken not to dip hands or to replace the sponges, &c., in it until they have been perfectly cleaned elsewhere.]

“ After the first examination has been made, the vagina is to be slowly syringed or (preferably) irrigated with a solution made by mixing an ounce of the disinfectant fluid with a quart of warm water—that is, with a solution of one-half the strength used for disinfecting the hands.

“ As few examinations are to be made as are necessary.

“ After each examination the hands are to be washed with soap and water, and dried.

“ Subsequent examinations to the first may be made, after dipping the hand into the antiseptic solution already prepared, and smearing the fingers with the carbolised vaseline.

“ If possible, the nurse should have three basins at least in the lying-in room—one, as already mentioned, reserved for the disinfectant solution; a second (large one) in which to wash hands, sponges, &c.; and a third (smaller one), for any additional purposes—*e.g.*, enemata, syringing, disinfecting metallic instruments with carbolic acid solution if necessary,” &c.

The precautions which I direct the nurse to adopt are the same as those which I also adopt myself. Upon a few of the suggestions

contained in the memorandum, I desire to offer some further explanatory observations. In a "Report upon Recent Progress in Obstetric Medicine and Surgery," which appeared in the February number of the *Dublin Journal of Medical Science*, I reviewed at length the evidence in favour of corrosive sublimate solutions as the most reliable disinfectant for obstetric purposes. Very extensive trials of it have already been made in various German, French, and American maternities—all of which, in addition to Dr. Macan's results obtained by its use in the Rotunda Hospital, appear to prove that it is the safest, cheapest, and most efficient disinfectant as yet known to us. A few cases have since been recorded by Hofineyer, of Berlin, and Stadfeldt, of Copenhagen, in which its use has been credited with fatal consequences. In the Berlin case—that of a patient in whom there existed a severe perinæal laceration—irrigations of a strength 1:1000 were employed. A very foetid diarrhœa, with a slow pulse and slight fever, beginning on the 5th–6th day, ended fatally upon the 12th day of childbed. The necropsy showed gangrenous destruction of the mucous membrane, of the whole length of the large intestine, continued a short way up along the ileum; and the presence of mercury was demonstrated in the tissues. This was clearly a case of poisoning, resulting from irrigations of a needlessly strong solution. In Stadfeldt's case the symptoms attributed to poisoning—diarrhœa, vomiting, and suppression of urine—followed some days after a single intra-uterine irrigation of a 1:1500 solution given upon the 5th day. Mercury was not, however, found upon a chemical examination of the tissues, and the poisonous origin of the lesions—ulcerative disease of the intestinal mucous membrane and parenchymatous nephritis—must be considered unproven. I believe that toxic consequences might be avoided, and the full antiseptic advantages gained by employing weak (1:4000) solutions for intra-uterine and vaginal irrigations when necessary, and 1:2000 solutions for cleansing the external genitals, disinfecting non-metallic instruments, and the hands of the nurse and physician. There can be no doubt that in a very large number of cases internal irrigations have been employed, especially by the Germans, of a quite unnecessary strength, and with a frequency bordering upon recklessness; and that toxic consequences have been so rare must be considered as strongly suggesting that, with proper restrictions, the use of this disinfectant is devoid of any special danger.

That "meddlesome midwifery is bad," is an aphorism the truth

of which should commend itself to none more than to the thoroughgoing advocate of the heterogenetic origin of most puerperal fevers. It is the cardinal point in the creed of such an one that he should meddle as little as possible with the freshly-wounded and very absorbent genital passages of a puerperal patient. He recognises in every needless act of meddling a fresh and unjustifiable source of danger. It is quite true that the pioneers of antiseptic midwifery often erred in their forgetfulness of this fact, and laid themselves open to the charge of having enlarged the catalogue of puerperal risks and irritations by their zeal for new manipulations, intra-uterine and vaginal irrigations or injections, &c. Examples of such a restless and prejudicial activity are mostly to be found in the practice of Continental, and especially German, authorities. Make as few local examinations or manipulations as are required in the interests of the patient, and let those that are necessary be made as aseptically as is possible—these, I take it, are the two main principles which should guide our practice, and upon which most of the individual rules which follow are based. Special care should be taken to keep the patient clear from any possible infection with the exanthemata, erysipelas, or diphtheria, during the latter weeks of pregnancy.

The lying-in room should be as clean, airy, and healthily situated as possible. The bed should be without curtains. During the first stage of labour, and as early as possible, the vagina should be irrigated with a 1:4000 warm solution of corrosive sublimate, and the external genitalia washed well with the same solution, or one of double the strength. Local examination should be made only when necessary, and always with the precaution stated in the directions given to the nurse.

When the presenting part appears at the vulva during a "pain," it is to be well smeared with the antiseptic vaseline used for the fingers during examination; during the recession between the pains the antiseptic will then be drawn into the vagina and applied to the sides of the vaginal inlet. During the period of "crowning," the perinæum and borders of the vulva are to be liberally smeared with the same ointment. The delivery of the child and the third stage are to be so managed, *secundum artem*, as to secure the complete deliveries of the secundines, and the permanent retraction and efficient contractions of the uterus. After the birth of the child no internal examinations are to be made except on account of special indications. The placenta having been delivered, I give one full

dose (3 i.) of the extract of ergot (Long's), with the intention of securing firm uterine contraction before the application of the binder. In multiparæ especially this precaution is a useful one.

The flexures of the thighs, nates, and the external parts are finally sponged and cleaned with the 1:2000 solution of corrosive sublimate; the perinæum examined, and, if necessary, sutured; and lastly the binder and vulval napkin applied after all danger of hæmorrhage has passed by. Instead of a napkin it may be better to use an absorbent antiseptic dressing, such as a small cushion of prepared oakum or boracic cotton enfolded in soft gauze. These final attentions having been paid to her, the patient is directed to assume and, as far as is possible, retain for a time the dorsal decubitus.

Except in cases of prolonged, difficult, manual or instrumental delivery, or of a putrid foetus, I believe that only one antiseptic irrigation is necessary during labour. This one should be given early.

Intra-uterine irrigations after labour are to be employed only under the following circumstances—whenever, for purposes of delivery (version), or of removing a retained placenta or portion of it, the hand has been introduced into the uterus; when a putrid foetus has been born; when it is required to wash out or cause expulsion of retained strips or pieces of membrane without the introduction of the hand. A 1:4000 solution of corrosive sublimate may be used, hot or cold, as may be advisable in the particular case.

The danger of infection, at its acme during labour, becomes steadily less with the progress of childbed. After the fourth day, when the puerperal wounds have granulated, and the milk secretion has been established, the dangers of wound infection almost disappear. So far as concerns antisepticism, the chief indications during childbed are:—

1. *To maintain efficient uterine contractions.*
2. *To secure free drainage for the lochia.*
3. *To obtain a due amount of rest for the bruised and wounded genital parts.*
4. *To attend to cleanliness, and prevent the access of all putrefactive and infective agents.*

These indications may be met by:—

The proper application and re-application of the binder, the uterus being stimulated to contract and expel any stagnant contents by friction through the abdominal walls each morning and evening.

The early application, at proper intervals, of the child to the breasts.

The administration of half-drachm doses of Long's ergot, combined with 3 grs. of quinine, twice or three times daily for a week after delivery, especially in multiparæ.

The maintenance of a dorsal decubitus during the early days of the puerperium, varied by a semi-erect or "hands and knees" position when passing urine, &c.

The vulvar napkins are to be frequently changed, and the external parts carefully washed at each time of changing with a 1:2000 solution of corrosive sublimate (or 1:20 of carbolic acid), a soft pad of oakum or absorbent cotton being used instead of a sponge.

It is necessary that on each occasion on which the nurse comes into contact with the external genitals of the patient, she should previously have washed her hands with the same care and antiseptic precautions as have been recommended during labour.

With a view to lessening the dangers of infection, it has been strongly recommended to use antiseptic vaginal irrigations every six or eight hours during childbed. In the wisdom of this advice, if applied to every case, I can by no means concur. It necessarily follows that I still more emphatically disapprove of intra-uterine prophylactic injections. The lochial secretion is not, under healthy conditions, inimical to the patient; and, provided due care has been taken to avoid infection during labour, I can understand no advantages, but rather damage, to probably result from such palpable infringements of the surgical canon which demands rest for the wounded parts. Until healing processes have advanced somewhat there is absolute risk in these manipulations, which interfere with that quick return to the normal, which constitutes one of the chiefest safeguards against septic poisoning or puerperal wound infections. I have, therefore, entirely discarded the use of vaginal or intra-uterine irrigations during the first five days of childbed, except under certain clearly defined conditions. These conditions are:—

1. The delivery of a putrid foetus.
2. The retention of pieces of placenta or membranes.
3. Foetid lochia.
4. After protracted labours, involving manual or instrumental delivery, with severe crushing or injury to the maternal soft parts.

Under any of these circumstances immediate action is desirable, so as to minimise the obvious dangers. I believe that the best results may then be obtained by the use of 1:4000 solutions of

corrosive sublimate, as hot as can be borne, taking every necessary care to avoid the special dangers inseparable from such irrigations.

Under the first three sets of circumstances intra-uterine irrigations are necessary, and in such cases the vagina ought always to be first washed out, so as to avoid introducing septic matter directly into the uterus on the nozzle of the irrigator. After difficult labours I use vaginal irrigations only, twice daily, unless intra-uterine washing be indicated by the coexistence of some special condition.

In cases such as those just alluded to, where there exists any particular liability to septic poisoning, the irrigations may require to be employed three or four times daily, until the lochia assume a normal character and lose all fœtor. But fœtid lochia will seldom occur in the practice of those who adopt the proper precautions for keeping all septic substances apart from their patients, who attend to the complete delivery of the secundines, and subsequently maintain efficient uterine action and drainage during childbed.

The use of irrigations in the treatment of any of the forms of puerperal fever does not fall for consideration within the strict limits of this communication.

Notwithstanding the unavoidable length of this paper, I am conscious that I have only treated a large subject in a very fragmentary way. In that part which dealt with the nature and origin of puerperal fevers I have been more anxious to combat certain prevailing and, as I regard them, erroneous arguments and opinions, than to prove by a rigorous induction from clinical and pathological facts that particular theory which I look upon as containing the greatest amount of truth. Still I feel assured that no one and exclusive theory can be made to cover all the facts of experience. Instead of framing or supporting any such theory, I have striven to indicate the many-sidedness of these fevers, while rejecting the idea that there is any fever specifically connected with childbed. The conclusion, however, has forced itself upon me that the most serious and frequent of these fevers originate in puerperal wound infection. If this conclusion be accepted as sound, then I apprehend that no criticism can properly be directed against the minuteness of the prophylactic measures recommended, unless, indeed, it be proved or made probable that these, *per se*, are more injurious than the dangers they are intended to combat. For these measures, or others resembling them in kind, are only the legitimate and inevitable applications to practice of the premises on which they are grounded. They are uncalled-for only if we are prepared to accept and perma-

nently establish the classical 1 in 120 private puerperal mortality; but they will be thought neither too minute nor too troublesome by those who earnestly endeavour to minimise the saddest and most reproachful of death-rates.

ART. XXIII.—*A Retrospect of the International Medical Congress of 1884.* By F. J. B. QUINLAN, M.D. Dubl.; M.R.I.A.; Fellow and Censor, King and Queen's College of Physicians; Physician to St. Vincent's Hospital.

UP to the year 1867 the medical profession throughout the civilised world consisted of a number of independent local bodies, connected by a certain bond of sympathy, but each cultivating medicine as best it could. Their only personal ties of connexion were the occasional appearances of foreign students in renowned centres of medical study, or the visits of qualified medical strangers to such places; but, most of all, the perusal of each other's writings. The medical journals and permanent medical literature of France and Germany attained an early and deserved repute, which was worthily rivalled by those of Great Britain and Ireland, and more lately by those of the United States. From the rest of the world but little illumination was obtained, although every now and then some ray of light streamed forth, showing what treasures of experience were running unheeded into the sea of oblivion. The character of the medical profession was intensely local, but in other branches of biological science there was a greater exchange of thought and of observation, but always confined to nations, or at least to languages. The first departure of a purely international character was in the direction of Hygiene, in which all countries were interested, particularly as regards quarantine. This Congress was held in Brussels in the year 1852, and its utility was so evident that in 1857 an international meeting was held for the discussion of the advancing subject of Ophthalmology, at which England, France, Germany, and Austria brought into one focus their separate researches into this great speciality. The idea of international medicine was now in the air; and, at the meeting of the French Medical Congress held at Bordeaux in 1865, Professor Henri Giutrac made the happy suggestion that, as "all the world" would be at the great International Exhibition at Paris in 1867, it would be well that the French medical profession should hold professional converse with the vast crowd of foreign physicians

and surgeons who would certainly be there. This suggestion was received with acclamation, but was wisely carried out in a limited and tentative manner. The discussions, which were in French only, were confined to seven questions connected with the purely scientific domains of medicine, and which had been previously announced throughout Europe by the medical journals. This Congress was a great success; and, although carried out without *fêtes* or ceremonies, enjoyed the active patronage of the French Government, as was shown by the official presence of the Minister of Public Instruction. In opening the proceedings M. Bouillaud used these remarkable words:—"We celebrate to-day the most magnificent *fête* that the history of medicine records;" and it was evident to all that an important new departure had been taken. On the second day Dr. Pantaleoni, of Rome, recommended that "the present should be the first of a series of international reunions;" and at the close of the meeting every country was competing for the honour of receiving the next gathering. M. Vidal proposed that these meetings should always coincide with whatever international exhibition might be going on—apparently distrusting the vitality of the medical profession to sustain such action without external stimulus. Finally, Florence was selected as the theatre of what M. Bouillaud, in the lofty diction of the French professor, designated as "the second Olympiad;" and here a further development occurred. The Italian Government furnished halls and offices; the matchless public and private art collections of the city of flowers beside the Arno were thrown open to the foreign visitors; and a pleasant trip to the royal baths of Montecatani, along with a grand banquet given by the medical profession and inhabitants of Florence, tended to smooth away any possible international friction—in fact, the *Gazette Médicale* candidly admitted that on this occasion "things were not done better in France." The Franco-German warlike cataclysm now intervened, and, as a consequence, the next Congress was delayed until 1873, and was held at Vienna along with the International Exhibition; and here some organic changes occurred. The meeting was compressed into a week instead of a fortnight, and in place of one language proceedings were permitted in French, German, Italian, or English—the latter being an instance of great liberality, as the share of the British medical profession in the movement was up to this nominal. At the instance of Messrs. Warlemont and Crocq, the Belgian delegates, the next meeting was fixed to be held in Brussels in

1875 ; and here it may be said that the mechanism of the International Medical Congress was moulded into its present form and shape. The Congress was divided into sections, and daily programmes were published announcing the work to be done in each, so that every member could devote himself to the departments in which he was specially interested. The number of meetings was thus increased and the amount of work done enormously magnified. All communications and discussions were confined to the French, German, or English languages, so that to the well-educated members everything was open. The King of the Belgians honoured several of the meetings by his presence, and splendid *fêtes* and excursions enlivened proceedings which will always be looked back to with pleasure. The only thing, in fact, which has had to be altered was the curious system of taking votes upon scientific questions—in the sections as a court of first instance, and at the general meeting as a tribunal of supreme appeal. This system of scientific plebiscite, which can never settle any scientific question, has since been entirely abandoned. The succeeding Congresses at Geneva in 1877, at Amsterdam in 1879, and at London in 1881, followed closely upon the lines of Brussels. The London Congress was distinguished by the splendour of its hospitalities, and by the admirable manner in which its “Transactions” were brought out by the Secretary-General, Sir Wm. MacCormac. The London Congress was, moreover, the largest in numbers ; but the Copenhagen Congress was much more important in an international point of view. In the London Congress two-thirds of the members were British and Irish medical men, and the foreigners were in a great minority, whereas in the Danish capital these proportions were much more than reversed—in fact, never before were so many foreign physicians from different parts of the globe collected together in one city. The sectional arrangements were similar to those of London, except that the Dental Section was absorbed into that of Surgery, which was well ; and that of Pharmacology and Therapeutics was entirely omitted, which was simply deplorable. The consequence was that at Copenhagen practically nothing was done in the direction of Therapeutics, the most advancing branch of medicine, and the one which affords the widest field for original research of a scientific and definite character. There was a very successful Therapeutical Section at London in 1881, and at the recent meeting of the British Medical Association at Belfast a similar section (inaugurated for the first time) was the leading

feature of the gathering. With this exception the arrangements at Copenhagen were simply perfect. The reception of the foreign visitors was cordiality itself; the Sectional Presidents were indefatigable; the Secretary-General, Dr. Lange, was almost ubiquitous; and a Committee, who apparently spoke among them every language in Europe, were always at hand to afford all information and assistance to their foreign guests. This Committee was at the railway station to receive us on the Saturday morning of our arrival, and saw us off on the evening of our departure—and let not the graceful official compliment of the Danish Custom-house authorities be forgotten, in their exempting from all examination the luggage of their scientific visitors.

Reviewing the work of the recent Congress, we cannot fail to be astonished at the progress which the medical art has made in the last seventeen years, during which the medical profession of the whole civilised world has worked as one harmonious and compact body—meeting every two or three years to compare results, to correct erroneous views by international discussion, and to encourage each other in the onward path. No other human avocation or calling presents the spectacle of several thousand scientific investigators from every part of the globe, including such places as Iceland and Russia, Turkey and Australia, America and Japan, meeting for a week at some appointed rendezvous, speaking or listening, generally through the medium of some foreign and artificially acquired language, and then flitting away, each to his own home, instructed and improved. There we see and hear those famous celebrities who would otherwise be to us simply names; and, if we very often discern the depths of our own ignorance, we are at least encouraged by seeing what has been accomplished by others. To give anything like a detailed account of what has been done at Copenhagen, would be manifestly impossible; but I would single out the luminous address of M. Pasteur, who has, by a discovery equal in importance to that of Jenner, brought us within measurable distance of the extinction of hydrophobia—one of the most appalling and incurable of the maladies which afflict humanity. The virus of smallpox has been attenuated without human effort by naturally passing through the system of the cow, and this attenuated virus produces in the human body a disease practically free from risk; and if this harmless disease be artificially produced in the system of a human being in infancy and again after puberty, that individual is found to be incapable of

contracting smallpox. M. Pasteur has, by an artificial process, attenuated the hydrophobic poison, and finds that a dog inoculated with this attenuated virus sickens, but recovers; but that the animal, having gone through this process, becomes impregnable against canine rabies. Having completed his experiments, M. Pasteur applied to the Minister of Public Instruction, M. Fallières, who appointed a commission of supreme authority containing such men as MM. Vulpian, Villemin, Beclard, and Paul Bert, and to them M. Pasteur delivered twenty-three protected dogs for experimentation. The committee commenced by operating with rabid salivary poison, obtained from the Veterinary School at Alfort, upon nineteen dogs. In eight of these dogs a small hole was trephined in the skull, and the poison was injected under the membrane of the brain, and all died of rabies. In six the poison was injected into the veins, and four died. Five were exposed to be bitten by a rabid dog, and three died. M. Pasteur's twenty-three protected dogs were tried in all these ways, and none of them died of rabies—in fact, in the expressive words of the committee in their report to the Minister, “we find that M. Pasteur has advanced no statement that has not been confirmed by experiment.” “Hydrophobia,” said M. Pasteur, “never originates in the human subject, but is always contracted by his having been infected by some rabid animal, generally a dog. Now, as there is nothing to prevent every dog in Europe being protected, it is evident that the total extinction of this awful malady has arrived within the region of possibility.” Two questions M. Pasteur still reserves—1. Whether, a dog having been “protected,” the immunity continues for the life of the animal. 2. Whether, if an individual be bitten by a rabid dog, and immediately after inoculated with the attenuated virus, he will be protected from hydrophobia. As the period of the incubation of hydrophobia often runs to many months, this is possible; but M. Pasteur wisely leaves both these important questions to the test of future experience. A French medical student had offered to permit M. Paster to inoculate him with his “protection” virus, and then to allow himself to be bitten by a rabid dog. This noble offer was most properly declined; but it is to be hoped that the memory of this heroic student will not be forgotten. His self-sacrifice is quite on a level with the brave conduct of the late Dr. Rabbeth, Resident Surgeon to the Royal Free Hospital, London, who was making an opening in the windpipe of a little child dying of

diphtheria. Finding the windpipe choked with fluid, and with a full knowledge of the danger which he was incurring, he sucked it clear. Alas, a noble life paid the forfeit, and added another name to the list of medical martyrs who have perished in the discharge of professional duty.

A very striking address was that of Professor Tommasi-Crudeli, of Rome, upon malaria, the deadly and mysterious scourge which renders practically uninhabitable and uncultivable the vast district around the Eternal City, as well as many other places, all of which were formerly teeming with population, and were the granaries of the world. This learned Professor showed the microbe of malaria, and microscopically demonstrated it in all its stages from the time that, appearing as a speck upon a red blood corpuscle, it spread and finally shrivelled up the organism, thus killing the patient by the gradual and progressive deterioration of the circulating stream of life. Once the malarial poison takes possession of the system, if it do not destroy life, it impairs the whole subsequent life of the sufferer, constantly subjecting him to attacks of periodic fever, and even giving a periodic tendency to almost every sickness. About this malarial poison four great facts appear established—1. That anyone who sleeps at an elevation of at least forty feet over the ground level is usually safe from night infection. 2. That any temperature under 68° F. stops the action of the malarial poison. 3. That the greatest danger is incurred by those digging up or ploughing virgin malarial soil. 4. That certain medicines, such as the salts of quinia and of arsenic, have a curative and preventive power. Professor Crudeli prefers the latter, and in doing so agrees with the French Algerian military medical authorities, and differs from the majority of British observers.

Space will not permit the details of Professor Crudeli's address; but all heard with dismay that the re-afforestation of the district around Rome with the trees of the Australian *Eucalyptus globulus* has proved an entire and most costly failure. This remarkable conifer has the faculty of exhaling a constant terebinthine vapour, and it was hoped and believed that by ozonising a considerable portion of the atmospheric oxygen it would completely kill the malarial poison. All parties in the State have co-operated in this great social hygienic effort—the Italian Government, the Trappists of the Tre Fontane, other monastic establishments, and hosts of private individuals, and now we learn that all this effort and expenditure are in vain. There is unfortunately no doubt as to

the correctness of Professor Crudeli's statements, and they are fully confirmed by Dr. Aitken, of Rome, in a letter published in the *Brit. Med. Jour.* of Sept. 13. Professor Crudeli is of opinion that malaria can be abolished only by the thorough subsoil main drainage of the Campagna, and by the removal of stagnant surface water; but it is to be feared that the chances of these results being accomplished are utopian, and that the abolition of this depopulating scourge is a hygienic problem for future discoverers.

The debate upon pulmonary consumption and tuberculosis was a valuable one, notwithstanding the absence of Koch, of Berlin, who was not there to defend his bacillus. The paper of Professor Ewald, of Berlin, upon tubercular infection was interesting; and the discussion was enlivened by the bold declaration of Dr. Jaccoud, of Paris, that Koch's discovery was almost sterile in a clinical point of view. None of the Germans present seemed inclined to contradict this opinion, which most practical physicians will endorse. The infective character of pulmonary consumption was admitted in principle, but while there is no doubt that in Southern Europe this is a real substantive danger, it is equally certain that in our colder latitudes such an occurrence is exceptional.

Great progress has been made by the committee for establishing an uniform international nomenclature of stethoscopic sounds. At present in almost every country these sounds have different names, and much confuse the readers of foreign medical works, to whom uniformity in this respect would be an unmixed benefit.

The principle of the Listerian or antiseptic system of operative surgery was entirely endorsed, although there is still some legitimate difference of opinion as to the best method of carrying out this the greatest of advances in modern surgery. All agree that to insure success the most scrupulous attention should be paid to the most minute details so as to keep out every germ; that the contact of a single germ with the open surfaces is fatal to success, but that if the germs be effectually kept out the free opening of the knee-joint and other operations, which formerly no prudent surgeon would attempt, can be performed with the best results. The future of antiseptic surgery is now secure, and a century hence its remaining opponents will take rank with those mediæval surgeons who refused to trust human life to one of Ambrose Paré's new-fangled arterial ligatures, and resolutely plunged the freshly amputated stump into the can of boiling pitch.

These pages would not be a suitable place to describe the

splendid hospitalities of the Danish people from their Majesties downwards, and it is the less necessary, as they received from the public journals an amount of notice which was not awarded to the scientific details. The British and Irish members feel deeply grateful, and in the touching address drawn up by Sir James Paget have expressed their respectful sympathy with the Royal Family of Denmark and with the Danish people upon the destruction by fire of the grand palace in which they were so royally entertained by hosts as cordial and gracious in bearing as they are exalted in rank and enshrined in the hearts of their subjects. These Congresses will give a great impulse to the general education of the rising generation of physicians, for there will henceforward be a Congress every three years, and medical aspirants will do well to remember that their own language will afford but one of the three keys of knowledge. All who desire to attend these Congresses with profit must in addition acquire such a knowledge of French and of German as will enable them to at least follow the meaning of a French or German colleague reading a paper or taking part in a discussion. Without this faculty attendance at the Congress will be monotonous and comparatively unprofitable, but the possession of it—and it is not too difficult to acquire—will open all the fountains of knowledge to the inquiring visitor.

The next meeting has been appointed to be held in the capital of the United States in 1887, and there is no doubt that the welcome promised by Surgeon John S. Billings and by Dr. Browne of the Medical Department of the United States Navy will be in every way worthy of the great Transatlantic Republic. As this meeting will be held in the far west, it is thought that the reunion of 1890 will be in the extreme east, possibly in Constantinople. The smouldering fires of a great warlike conflagration cause a difficulty for the present in regard to any German city; but from the cordial spirit evinced by both nations at the recent gathering, it is certain that, in the medical profession at all events, such asperities will soon pass away. The Italian Government desire a meeting in Rome, the Spanish authorities are equally anxious for Madrid, and St. Petersburg also would wish it. There is great and noble work to be done, and let us all hope and believe that our cosmopolitan profession, which knows no creed or party, will approach it with intelligence, patience, and energy, with no polemical, political, or personal purpose to serve, but looking solely to the advancement of science and the elevation of our common humanity.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Transactions of the Academy of Medicine in Ireland. Vol. II. Edited by WILLIAM THOMSON, M.A., F.R.C.S.; General Secretary; Surgeon to the Richmond Hospital, Dublin. Dublin: Fannin & Co. London: Baillière, Tindall, & Cox. Edinburgh: Maclachlan & Stewart. 1884. Pp. 504.

THE First Annual Report of the Academy of Medicine, which begins this second volume of Transactions, is most encouraging. 201 Fellows are on the list, besides 21 Members and 22 Student Associates. More work, too, appears to have been done in the second than in the previous year of the Academy's existence, Vol. II. exceeding its predecessor by 120 pages; although the Sub-Section of Anatomy and Physiology is represented by four short papers only, occupying but seven pages. The Report states that "much valuable material was submitted" in this Sub-Section, and that "several authors retained their communications contrary to rule." Why should the study of anatomy and physiology make "angry passions rise," and lead to rebellion against the laws of the young Republic? The arrangement of the papers has been improved, those in each subject being kept distinct. We have still to regret the preponderance of "cases" and "notes" over comprehensive papers; but this is, we fear, inevitable, though it need not be so strongly marked. In our profession those whose skill and experience best qualify them to treat a subject at length, proportionate to its importance, have often least leisure for the pen. Would it be unreasonable to expect that the Presidents, general and sectional, should deliver addresses on special subjects, for publication in the Transactions, at the opening of each Session?

Of fifteen contributions to the Medical Section, only two rise above the level of cases with comments. These are Surgeon-Major Gore's paper "On the *Ætiology* of the Common Climatic Fevers of the Kumaon Hill-ranges in North-Western Bengal," and Dr. Nixon's discussion of the question "Does Reflex Paralysis occur?" In the former the existence of malaria in the Kumaon hills is demon-

strated abundantly—almost superfluously we might say. We have never met any of the “others” who (admitting that there is such a thing as malaria at all) “deny its existence in the Indian hills, and consequently cannot understand the presence of a disease depending upon this factor for its origin.” Nor do we think that there are many “physicians of local repute” who “have asked the question—‘Whether there are such diseases as remittent and infantile remittent fevers to be met with in India as distinct from enteric fever?’” There has, unquestionably, been a tendency in some Indian medical men to see enteric fever, its existence in India once demonstrated, in many cases of malarial intoxication; and, on the other hand, some physicians, who ought to have known better, have gone so far as to deny that the disease is ever found in India at all. Dr. Gore recognises the presence of both malarious and enteric fevers in India, and considers that the failure of quinine to cure a doubtful case of severe continued fever determines the diagnosis.

Dr. Nixon carefully states the evidence for and against the occurrence of “reflex paralysis,” and then examines “the nature of certain pathological processes which may serve to explain the occurrence of paralysis following peripheral lesions of several kinds.” He concludes that if reflex paralysis exist, “it is a paralysis by inhibition,” and that only three forms of peripheral irritation—diseases of the urinary organs, dysentery, and some uterine affections—are capable of causing paraplegia; and that this results either from an ascending neuritis setting up a myelitis, or from extension of inflammation to the cord along the veins, or from a descending neuritis passing down the sciatic nerves from the sacral plexus. Dr. Nixon’s essay (which was printed in our September issue) is the most valuable of the contributions to this Section.

Turning to the minor papers, Dr. J. W. Moore, in his “Clinical Note on Enteric Fever,” condemns as useless the exhibition of quinine in small doses as an anti-pyretic, and says it is difficult to understand how Niemeyer can have recommended two-grain doses. He suggests hydrobromic acid as a solvent for large doses of quinine. He doubts the benefits of the wet pack. Lastly, he found the administration of calomel in large doses beneficial and attributes its value to its aseptic properties. Dr. Hawtrey Benson’s case of “Poisoning by the Ingestion of Tainted Meat” is chiefly interesting for the abnormal condition of the patient’s urine, which contained 34 grammes urea and 1.39 grammes uric acid in a litre, the former more than double, the latter more than triple, the normal quantities.

Of eighteen papers read in the Surgical Section, only two (Dr. Cahill's "On the Carbolic Treatment," and Dr. Franks' "On the Radical Cure of Hernia") belong to the class of contributions which we desire to see more abundant. Dr. Cahill has the boldness, not to say the temerity, to revolt against the infallibility of Listerism. He maintains "that antisepticism, or prevention of fermentation, is quite unnecessary," and he gives nine reasons for his rejection of the Listerian cult. His eleven pages will repay perusal, independently of the pleasure which the contemplation of individuality and audacity yields. The best of us sometimes wearies of hearing Aristeides perpetually called the Just, and looks on with complacency while his name is being written on the oyster-shell.

The "Radical Cure of Inguinal Hernia" is the subject of two papers, besides Dr. Franks', by Dr. Stokes and Dr. J. K. Barton. Dr. Stokes gives four cases of treatment by what he terms "peritoneal and intercolumnar suture," of which three were successful. Dr. Barton describes three cases, two successful, in which Gross's "direct" operation, with a slight modification in the direction of simplification, was performed. Dr. Franks enters at greater and more satisfactory length into the subject of operative procedures for the radical cure of hernia, flourishing his Listerian banner defiantly in the face of the sceptical enemy. Dr. Thomson's "Case of Pistol-shot Wound of the Cerebellum" is of great interest, local as well as general—local, as involving the question whether the detective who was fatally wounded in this city in November, 1882, was the victim of murder or of *trop de zèle* on the part of his brother detectives; general, as bearing upon the immediate effect of such an injury of the cerebellum as was found to have been inflicted, and the possibility of the wounded man's advancing under the circumstances. This paper, though short, is of great value.

Of the ten papers read before the Obstetrical Section, only two demand special notice. Dr. Macan contributed the "Report of the Rotunda Hospital for 1883," "dealing chiefly with the application of Listerism, or, if any one likes the term better, of antiseptics, to midwifery." Starting from Semelweiss's proposition, that "puerperal fever is caused by the absorption of animal matter in a state of decomposition," he holds that the disease is, therefore, preventable," and, should it occur, one must be ready to acknowledge that its presence is due either to ignorance of the precautions necessary to prevent such an occurrence, or to failure in seeing that such

precautions are rigorously carried out." The precautions enforced in the Hospital are elaborate, and to them Dr. Macan attributes the favourable results of the year's work, thus summarised:—

"These six deaths comprise the total mortality, *from all causes*, of these 1,090 women during the entire time they were under our care. Furthermore, I did not, during the year, transfer a single puerperal patient to any other hospital, and only one woman left in such a condition as to lead us to fear for the result, and I have since ascertained that she was alive six months afterwards. Hence this mortality of 0·55 per cent., or 1 in 181·6 patients, represents not only the puerperal mortality, but also the total mortality of the puerperal state, which is a very different thing. When such competent authorities as Dr. Matthews Duncan and the late Dr. M'Clintock estimate the puerperal mortality of private practice as not less than 1 in 120 cases, we may, I think, safely conclude that a patient delivered in the Rotunda Hospital during the past year ran far less chance of dying than if she had been delivered in her own home by a private practitioner."

We must wait a few years before we can be as sanguine as Dr. Macan about the result of his antiseptic precautions. What was, from the nature of the case, absent from his paper—a definition of the "puerperal fever" which, being caused by the absorption of animal matter in a state of decomposition, is therefore preventable—is amply supplied in Dr. Neville's elaborate and valuable essay "On the Nature and Prevention of the Graver Fevers of Childbed." His main conclusions are that there "are two chief types of puerperal toxæmia accompanied by fever—the infective and non-infective;" the latter the result of septic poisoning, and including the greater number of the sporadic and more remediable cases of puerperal fever; the former most of the serious and epidemic cases. In these "the succession of cases is kept up by the actual transfer of the infective contagia (almost certainly consisting of pathogenic bacteria or their spores contained in the unhealthy secretions) by hands, instruments, &c., from one patient to another. The initial case of such a series may be due to the infection of the patient with septic material derived from the juices of some corpses—especially such as are but lately dead of some malignant infective disease—from gangrenous, sloughing, erysipelatous, or diphtheritic wounds, &c."

In the Pathological Section the most important paper appears to be that of Dr. Benson on the "Nature of Jequirity Inflammations," in which he rehabilitates one member of that much-abused class of vegetables, the bacilli. He demonstrates that there is at least

one disease in nature—the jequirity conjunctivitis—which can be produced and maintained without the help of a micro-organism.

In the Hygiene Sub-Section there are but three papers, one being Dr. Cameron's inconclusive investigation of the cause of the antiseptic property of the air in the vaults of St. Michan's Church. In Dr. Tweedy's "State Control for Chronic Inebriates" he recommends that an habitual drunkard should be legally liable to be placed under restraint, not only, as at present, at his own request in writing, but also on the joint certificate of his nearest of kin, a magistrate, and two medical men chosen by them and having separately examined the patient, or "on having been three times within six months convicted in a court of summary jurisdiction of some offence or offences whereof drunkenness forms part." Dr. Madden discourses at considerable length "On the Increase of Insanity, with Suggestions for the Reform of Lunacy Law and Practice." He maintains, and supports his assertions with statistics, "that insanity has rapidly increased, and is still increasing, in these countries, whilst its curative treatment has not advanced in the smallest degree," attributing the latter fact (if it be a fact) to the abandonment of this branch of therapeutics by physicians to specialists. It does not seem that specialism has injuriously affected the treatment of diseases of women, in which Dr. Madden takes considerable interest, and it is not clear how it can have the suggested result in the treatment of insanity. His figures, in spite of the well-known fallacy which underlies statistics of this kind, do seem to show that insanity is increasing in these islands, and that women are more liable to it than men. The paper is a valuable contribution to the controversies upon the lunacy laws and the treatment of lunatics, which are beginning to attract the notice of the profession and the public.

Micro-Organisms and Disease: an Introduction into the Study of Specific Micro-Organisms. By E. KLEIN, M.D., F.R.S.; Joint Lecturer on General Anatomy and Physiology in the Medical School of St. Bartholomew's Hospital, London. London: Macmillan & Co. 1884. 8vo. Pp. 195.

THERE is a homely adage to the effect that "the best goods are packed in the smallest parcels," and the little book before us illustrates the truth of the saying. Diminutive in size and printed in small close type, it seems as if the subject-matter—"Micro-

Organisms and Disease"—had suggested the publication of the work in the form of a "microcosm." Whether this was judicious on the part of the author, or of the publishers, or of both, we are inclined to doubt. However, we must needs be content with the "multum in parvo" with which Dr. Klein has favoured his readers.

The work, with a few additions, is a reprint of a series of articles which have been appearing from month to month in the *Practitioner* for the present year. It contains a record of a vast number of original investigations into the life-history of micro-organisms connected with infectious diseases. Most of these investigations were undertaken during the past ten years for the Medical Department of the Local Government Board for England, of which Dr. Klein has been for a long time a tried and trusted officer.

One of the most valuable features of the book is the excellence of its illustrations, more than one hundred in number. They are excellent in a twofold sense, for not only are they well finished, but they are also clear and, so far as we can judge, accurate.

In a brief Introduction the author declares his aim to be—"first, to describe the methods that may be employed with success in investigations bearing on the relation of micro-organisms to disease; secondly, to describe in conformity with reliable observations the morphology and physiology of the micro-organisms that bear any relation to disease; and thirdly, to enumerate the observations that have been made in recent years to prove the existence of such an intimate relation. Last, but not least," he continues, "we shall consider the precise relation of the particular micro-organisms to the causation of disease" (page 2).

In the earlier chapters Dr. Klein describes the method of carrying out microscopic examinations of micro-organisms, the preparation of culture material, the vessels and instruments used in cultivations, the preparation of culture-media for inoculation, and the methods of inoculation.

Chapter VI. deals with the morphology of Bacteria, which are defined to be "minute organisms not containing chlorophyll, and multiplying by fission"—hence the term given them by von Nägeli, *schizomycetes* or "fission-fungi" (σχίζω—I cleave, and μύκης, μύκητος—a mushroom, or fungus). Some bacteria require free access of oxygen, while others grow without oxygen. The former are called by Pasteur "aërobic," the latter "anaërobic." The best classification of bacteria is that given by Cohn in the

first volume of the *Beiträge zur Biologie der Pflanzen*, namely—1. Spherobacteria micrococci; 2. Bacteria, or micro-bacteria; 3. Bacilli, or desmobacteria; 4. Spirilla; 5. Spirochæte.

In Chapter VII. a very full account of micrococci is given; they may be divided, according to their chemical and physiological function, into—(a.) septic, (b.) zymogenic (Flügge), (c.) chromogenic, and (d.) pathogenic. The first class occur wherever there is decomposition of organic matter in solids or in fluids. Zymogenic micrococci are associated with definite chemical processes—e.g., *Micrococcus ureæ*, causing the ammoniacal fermentation of urine. The chromogenic varieties are distinguished by their power of forming various-coloured pigments. Pathogenic micrococci are for the most part connected with disease, as for example—*M. variolæ et vaccinæ* (Chauveau), *M. erysipelatosus* (Lukomsky and Fehleisen), *M. diphtheriticus* (Oertel), *M. pneumoniæ* (Klebs, Friedländer, &c.), *M. gonorrhœæ* (Neisser), *M. endocarditicus* (Heiberg, &c.), *M. scarlatinæ* (Coze and Feltz), and many others such as are found in cattle plague (Rinderpest), puerperal fever, pernicious anæmia, and acute infectious osteomyelitis.

Similarly Dr. Klein describes in a clear and interesting way the different forms of Bacterium, Bacillus, and Spirillum. Of the bacillus the author enumerates and describes no fewer than thirteen pathogenic varieties, exclusive of “the so-called Bacillus of Cholera”—the comma-shaped bacillus—which Koch considers to bear a special relation to this disease. By using the term “so-called,” Klein expresses his scepticism as to the results supposed to have been attained by Koch.

Chapters XIV. and XV. contain a very graphic account of Yeast-Fungi (Torulaceæ, or Saccharomycetes) and Mould-Fungi (Hyphomycetes or Mycelial Fungi) respectively. Then follows a short chapter (XVI.) on the remarkable and fatal disease among cattle, to which the name of *actinomycosis* has been given.

The closing chapters are among the most interesting and instructive of any in the book, but we cannot do more than mention their subject-matter. In Chapter XVII., copied in great part from an interim report by the author to the medical officer of the Local Government Board for England, made during the present year, Dr. Klein discusses the relations of septic to pathogenic organisms. There is a statement in this chapter to the effect that, after a very careful and extensive series of experiments, Dr. Klein proved beyond any doubt that the jequirity bacillus,

per se, has no more power to create an infectious ophthalmia than Buchner's hay-bacillus had of creating anthrax. This quite agrees with the results obtained by Mr. Arthur H. Benson, of St. Mark's Ophthalmic Hospital, Dublin, in his recent investigations into the nature of Jequirity Inflammations, which he published in the number of this Journal for October, 1884. Mr. Benson found that the discharge and the membrane formed in jequirity ophthalmia contained no bacilli, that this form of ophthalmia was not communicable, and, in a word, that the bacillus was not the cause of the ophthalmia.

Chapters XVIII. and XIX. are devoted to a consideration of the vital phenomena of non-pathogenic and pathogenic organisms respectively. "Vaccination and Immunity" is the subject of Chapter XX., in which a brief account is given of the "Exhaustion Theory" and the "Antidote Theory" of immunity from a second attack of a particular infectious disease. The latter, propounded by Klebs, is accepted by the author as being more probably in harmony with the facts. According to it the organisms growing and multiplying in the body during the first attack produce, directly or indirectly, some substance which acts as a sort of poison against a second immigration of the same organism.

This useful little book closes with a short chapter on "Antiseptics." This we hope to see much amplified in that second edition to the early appearance of which we look forward with confidence.

Manual of Pathological Histology. By CORNIL and RANVIER. Second Edition, Re-edited and Enlarged. Translated, with the approval of the Authors, by A. M. HART. Vol. II.—Special Pathological Histology—Lesions of the Organs. Part I. London: Smith, Elder, & Co. 1884. Pp. 311.

THE appearance of this further instalment of Mrs. Hart's admirable translation of the Manual of Cornil and Ranvier will be welcomed by all students of pathological anatomy. In the volume before us are described the lesions of the respiratory organs and of the mouth and digestive tube. Preceding the description of the morbid anatomy of each part is a short sketch of its normal structure, and in some cases, as in that of the salivary glands, valuable physiological considerations are added.

The whole work, which in its own country has long been looked on as a classic, has already in its English form acquired a justly

established reputation among us, and there is no one acquainted with pathology who can fail to recognise its many excellencies. Of the merits of the translation we have spoken in a former notice, and in the present part these merits are no less conspicuous than they were in the first volume. It is almost unnecessary to recommend so well-known a work to the notice of our readers.

On Sclerosis of the Spinal Cord; including Locomotor Ataxy, Spastic Spinal Paralysis, and other System-Diseases of the Spinal Cord; their Pathology, Symptoms, Diagnosis, and Treatment. By JULIUS ALTHAUS, M.D., &c., &c. London: Longmans & Co. 1885. Pp. 394.

THE pathological condition of the nerve centres, which is known as sclerosis, is one whose exact nature cannot yet be considered as completely settled. The following is the definition of sclerosis of the spinal cord given by the author of the work before us:—"An irritant morbid process, standing intermediate between inflammation and simple atrophy, which invades certain well-defined and evolutionally, anatomically, and physiologically distinct areas or systems of that organ (the spinal cord); and which leads, in course of time, to disintegration and wasting of the nerve tubes, very generally to partial or complete destruction of the axis-cylinder, and to overgrowth of connective tissue."

In the first chapter, after an enumeration of the different varieties of sclerosis, we have a short *resumé* of the researches of Flechsig on the development of the cord, and of the varieties which are not infrequently met with in the evolution of the parts of this organ. The hypothesis is hazarded that anomalies of anatomical growth may possibly be the chief material basis of what is now called the neurotic constitution. In succeeding chapters a very full account of the morbid anatomy and pathogenesis of tabes is given. The recent researches of Strümpell are fully considered, and the numerous tracts which he describes in the posterior columns are illustrated by a diagram. The changes in the spinal cord are held by Dr. Althaus to affect primarily the nerve fibres, whose axis cylinders die by want of nutrition, and thus excite irritative changes—first in the nuclei of the nerve fibres, and then in the surrounding connective tissue. He rejects the theories which place the commencement of the morbid process in the pia mater,

in the vessels, or in the connective tissue. The inflammation of the peripheral spinal nerves, to which so much attention has recently been called, is looked on as a complication, and in no way dependent on the changes in the spinal cord. This neuritis, however, is held to be the cause of many trophic disturbances which occur in tabes, such as the fragility of the bones and the arthropathies. As regards the nature of tabes and the exact mode in which the symptoms are grouped together and related to one another, it is found as yet impossible to give any positive opinion.

In speaking of the morbid anatomy of those forms of sclerosis other than tabes, the author criticises the cases of primary lateral sclerosis which have been published by Dreschfeld and others, and points out that in all of them changes have been found in the gray matter, as well as in the lateral columns. They are hence properly examples of amyotrophic lateral sclerosis. The only case as yet known of uncomplicated primary lateral sclerosis is that recently published by Minkowsky. Here the gray matter was intact, but both the crossed pyramidal and the direct cerebellar tracts were diseased. It is pointed out that the symptoms of lateral sclerosis may be due, not to primary disease in the cord, but to disease or deficient development in the central or motor convolutions of the cerebrum.

In disseminated sclerosis the changes seem to begin in the walls of the vessels and in the connective tissue, and to affect the nerve fibres secondarily. The persistence of the axis cylinders has been pointed out by Charcot, and probably explains the absence of secondary degeneration in this disease.

The pathology of so-called hereditary ataxy, or Friedreich's disease, consists in diffuse sclerosis of different parts of the cord and medulla oblongata, quite different from that seen in true tabes or in insular sclerosis. The clinical history also shows that these diseases are quite distinct one from the other.

A very long chapter is devoted to the ætiology of spinal sclerosis. The greater part of this is occupied in supporting the syphilitic origin of tabes. The author finds that 86·5 per cent. of his cases gave a history of syphilis, while in other nervous disorders the number of syphilitic histories was very small. The numerous objections to this view which have been raised are considered at great length, and are shown to want cogency. Not a single case was met with in which venereal excesses alone could be considered the cause of tabes. The causation of the other forms of sclerosis

is very obscure, but what is known of it will be found here stated at length.

Tabes is divided, as is usually done, into three stages—the pre-ataxic, the ataxic, and the paralytic or terminal. The symptoms manifested in each of these stages are very fully given in Chap. VI. Among those which are most valuable in enabling an early diagnosis to be formed are the loss of the knee-jerk (Westphal's symptom), lightning pains, and reflectory rigidity of the pupils (Argyll-Robertson's symptoms). The knee-jerk is most probably a reflex; it is never absent in healthy persons, except in young children, before they have learned to walk, or in very old and decrepit persons. It is, however, sometimes absent in other diseases besides tabes, and to be diagnostic of this condition it must be associated with good muscular power, with normal faradic excitability, and idiomuscular contractility of the quadriceps extensor muscle. In true tabes, when the knee-jerk is once lost it never comes back; in some other diseases a return has been observed.

There is probably no disease which presents more numerous and more varied symptoms than tabes does. All of these are described at great length, and their meaning explained, so far as this is possible. Our space will permit only a very brief reference to a few points of interest. Dr. Althaus has found that the olfactory nerve, when stimulated by electricity, or any irritant other than odoriferous substances, responds by the perception of a smell of phosphorus. This sensation has been observed in cases of tabes, and is supposed to be due to olfactory neuritis.

In the second stage of tabes the ataxy is the principal symptom. This the author divides into three epochs or periods:—"1. The initial period, in which the ataxy is so slightly marked that a skilful exploration is required in order to discover the symptom; 2. The truly ataxic period, in which the peculiar walk known as the ataxic gait is observed; and, 3. The period of muscular madness, in which even the ataxic gait is no longer possible, and muscular action, as far as it still exists, is in absolute confusion." A new test for the first period of ataxy is given, and is stated to succeed in demonstrating the incoordination of movement at a time before other tests have become available. This is to make the patient walk backwards. "For the tabid it is mostly very difficult to walk backwards at a time when he may have little or no trouble in walking forwards. His heels seem to catch the ground; he dare not move for fear of falling; and if he succeed in walking

backwards, it is in a peculiarly halting and odd fashion, which at once attracts attention."

The theory of ataxy has been much discussed, and is as yet far from settled. Dr. Althaus holds that it is due to the interruption of centripetal impressions which pass from the muscles, skin, joints, &c., of the limbs to the cerebellum, which presides over equilibration in standing, and to the basal ganglia of the cerebrum, which govern the movements of progression.

The other symptoms of the second, and those of the third stage are well described.

In the chapter on the diagnosis we find particular attention drawn to the similarity between the symptoms of the initial stage of tabes and those often presented by patients suffering from diabetes. The view that tabes is so very frequently of syphilitic origin influences greatly the prognosis; not so much perhaps as regards the developed disease, as in giving a means of preventing its occurrence. The great importance of an early and thorough treatment of all cases of syphilis is much insisted on, and the practitioner is warned to be on the look-out in every syphilitic patient for the early symptoms of tabes.

As regards the treatment of the disease itself the greatest hope rests in an antisyphilitic course—mercury and iodide of potassium or sodium; ergot, nitrate of silver, electricity, are useful; chloride of gold has been found inefficacious; courses of mineral waters and hydrotherapy in general are condemned, and nerve-stretching is looked on as worse than useless.

A short chapter is devoted to Friedreich's disease, or what is known as hereditary ataxy. It is shown that this curious and rare affection has no real resemblance to genuine tabes, but is allied in some respects to disseminated sclerosis, from which, however, it differs in important particulars.

The symptoms of spastic paralysis are sometimes simulated in young women, who recover completely after a time. In the diagnosis of these cases much assistance is derived from the use of a dynamometer constructed to measure the force of the muscles of the lower extremities. In cases of true lateral sclerosis the muscular power is much reduced, while in the simulated disease, although the patient may be unable to walk, the strength of the muscles is considerable.

In the treatment of spastic paralysis the best results are got by the application of the continuous current to the spine; of medi-

cines, a combination of arsenic and bromide of potassium is recommended.

Passing over the chapters on amyotrophic lateral sclerosis, secondary lateral sclerosis, and sclerosis of Goll's column, we find in the chapter on multiple sclerosis notice of a symptom which is considered of great diagnostic importance. The tendon or deep reflexes are in this disease commonly unequal on the two sides. In this they differ from what is seen in tabes, where they are symmetrically diminished, and in spastic paralysis, where they are usually equally exaggerated.

Two short chapters conclude the work. One of these is on what Westphal has called pseudo-sclerosis, or those cases which present the symptoms of one or other form of spinal sclerosis, but which either recover, or in which, after death, no lesion of the nerve centres is present. The other is on the different combinations of sclerosis of the posterior and lateral columns which have been observed, and to which much attention has recently been drawn.

We have much pleasure in recommending this book to our readers. It does not contain very much which is new, but it brings together in a concise and readable form much scattered information on an important and obscure class of diseases. We anticipate for it a success similar to that which has attended the other works of the same author.

A Text-book of Pathological Anatomy and Pathogenesis. By ERNST ZIEGLER. Translated and Edited for English Students by DONALD MACALISTER, M.A., M.B. Part II.—Special Pathological Anatomy, Sections I.—VIII. London: Macmillan & Co. 1884. 8vo. Pp. 371.

THE subjects treated of in this volume are:—I. The blood and lymph. II. The vascular mechanism. III. The spleen and lymphatic glands. IV. The serous membranes. V. The skin. VI. The mucous membranes. VII. The alimentary tract. VIII. The liver and pancreas. In the third volume, which is in preparation, will be found the sections on the kidney, the lungs, and the nervous system.

We can only very briefly notice some of the more interesting subjects discussed in the present volume.

The organisation of thrombi is described as brought about by an inflammatory process, in which the endothelial cells of the occluded

vessel take no part, but in which the new connective tissue is formed from leucocytes emigrated from the vasa vasorum.

In Chap. VII. we find a succinct but very useful summary of the malformations of the heart due to imperfect development of this organ.

Under the title "*Myomalacia Cordis*" is described a peculiar softening of the muscular tissue of the heart consequent on arterial anæmia brought about by disease of the coronary arteries, or, more rarely, by embolism of these vessels. This affection is an anæmic necrosis, and must not be confounded with fatty degeneration or inflammation. It is quite comparable to anæmic softening of the brain or encephalo-malacia. If the softening of the heart be extensive, death may result; if of less extent, repair may take place, but the softened muscular tissue is absorbed, and its place taken by cicatricial tissue. New muscular fibres are never formed. It is pointed out that the gradual occlusion of the coronary arteries which occurs in man is altogether different from their sudden stoppage produced experimentally in animals, and that the symptoms must differ accordingly. We could add that the results obtained in animals will need reconsideration in the light of Kronecker's recent discovery of the so-called co-ordinating centre in the heart, whose injury throws the ventricles into a condition of fibrillar contraction from which they cannot be recalled.

The vegetations of endocarditis are very fully dealt with, and their structure illustrated by an admirable drawing. They are described as due to "an exudative inflammation in which the exudation permeates the tissues and in part coagulates. When coagulation takes place the tissue undergoes necrosis; when there has been only an infiltration of leucocytes the tissue persists. The inflammatory process is, therefore, diphtheritic in its nature. It is closely related to superficial diphtheritic inflammation of the mucous membranes, and to pustulation of the cutaneous surface." The very frequent occurrence of micrococci in all forms of endocardiac vegetations is noticed—an argument in favour of the parasitic nature of acute articular rheumatism.

The serous cavities have generally, since the works of His, been looked on as belonging to the lymphatic system, and as lined by endothelial cells of the same kind as those lining the vascular canals. Recent embryological research has, however, given rise to a change in this view. It has been found that, in reality, the pleuro-peritoneal, or body-cavity, is genetically an outgrowth from the

alimentary canal, and that, consequently, the cells lining it must be looked on as hypoblastic, and as related not to the vascular endothelium and the connective tissue cells, which are all mesoblastic, but to the true secreting epithelia. This view throws much light on the character of a rather puzzling class of tumours—the so-called endotheliomata or endothelial cancers. These growths occur primarily in the serous membranes, affecting the pleura and, less frequently, the peritoneum. “They are usually said to arise from the multiplication of the endothelial cells of the lymphatics, but this appears very doubtful. As it can be shown that the surface epithelium of the serous membrane is in a state of active proliferation, and gives rise, at least, to some of the columnar elements of the growth, it is more natural to refer the development of the neoplasm generally to the proliferation of the epithelium of the primitive body-cavity, and thus to reckon it as a genuine carcinoma.”

Section V., comprising eight chapters, deals entirely with the pathological anatomy of the skin. It is unquestionably the best account of this subject to be found in our language.

It is very commonly stated that in the formation of an inflammatory bleb or vesicle, the fluid is transuded between the horny and mucous layers of the epidermis. This is, however, according to Ziegler, never the case; but the process consists always in vacuolation, coagulation, and melting down of the epidermic cells themselves. This process is fully described, and is illustrated by several excellent drawings.

While admitting that the structure of many lupus knots resemble that of tubercle, the author does not accept the view that lupus is always a cutaneous tuberculosis. He seems inclined to deny the contagious properties of the so-called molluscum contagiosum. Rodent ulcer is looked on as a form of cutaneous cancer or epithelioma.

In the section on the mucous membranes the difficult and confusing subjects of croup and diphtheria are treated of with an unusual clearness, and the text is well illustrated. In croup the membrane consists entirely of exuded fibrin and leucocytes; the subjacent epithelium is more or less injured, but does not enter into the formation of the membrane. In superficial diphtheritis the epithelium is necrosed and permeated with a coagulating exudation, and the dead and coagulated epithelium forms the so-called false membrane. In deep or parenchymatous diphtheritis the necrosis and coagulation extends into the tissue of the mucous membrane itself. Croup and superficial diphtheritis are rare in the digestive tract,

common in the respiratory. This depends on some peculiarity of the mucous membrane, which is not further specified. True croupous inflammation may occur in mucous membranes which are normally covered with stratified epithelium when the superficial cells have been destroyed and shed. Parenchymatous diphtheritis may affect any mucous membrane. It is generally the result of infection, and frequently associated with bacterial invasion.

On page 243 we find a good drawing of actinomyces, supplying a want we complained of in our notice of the first volume.

In speaking of hepatic cirrhosis, the distinction into the hypertrophic and atrophic varieties is admitted; but they are both considered as merely different degrees of, or stages in, the same process. The correctness of the views of Charcot and his school, according to which the atrophic is always of portal origin, while the hypertrophic is due to irritation starting from the bile ducts, is absolutely denied. The chains and groups of isolated epithelial cells which, in most cases of cirrhosis, are seen in the hyperplastic connective tissue, and which are commonly looked on as newly-formed bile ducts, are stated positively to be merely liver cells separated from their surroundings by the intralobular fibrous invasion. It is admitted, however, that in some cases the ducts are increased in number; but we are not told how these ducts are to be distinguished from the isolated portions of liver tissue.

Among the numerous beautiful drawings with which the work before us is illustrated, we would call special attention to the figure on page 329, representing a section of an injected liver in granular atrophic cirrhosis.

As in the case of the first volume, we find in the second a good index of subjects and list of authors quoted.

We have no hesitation in pronouncing this work to be, without exception, the best treatise on pathological anatomy to be found in English, and, as such, we again most cordially recommend it to our readers.

TREATMENT OF EPISTAXIS.

DR. THOMPSON has found the injection of hot water into the nostrils efficacious in arresting epistaxis. The use of hot water as a hæmostatic in other cavities of the body is well known, and it would seem that it is beneficial in hæmorrhage from the nose also.—*The Medical Herald.*

PART III.

HALF-YEARLY REPORTS.

REPORT ON NERVOUS AND MENTAL DISEASE.

By RINGROSE ATKINS, M.A., M.D.; Resident Medical Superintendent, District Lunatic Asylum, Waterford.

[Concluded from page 453.]

II. ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM.

Sexual Differences in the Cerebral Surface.—Dr. T. Dwight (*Boston Med. and Surg. Journ.*) states that but very little notice has been taken of the influence of sex in the size and shape of the brain, and more especially the convolutions. Nearly thirty years ago Husckle maintained that differences in the convolutions of the male and female brains could be detected, and that, as a rule, the fissure of Rolando was more nearly vertical in woman than in man, so that the distance of the top of the fissure from the posterior end of the brain was relatively greater in the former; consequently, in man the frontal lobes, and in woman the parietal, were relatively the larger, and the female brain was rounder. Rudinger, of Munich, states that in most male foetal brains the frontal lobes are more massive, broader, and higher than in female ones; that the convolutions in the female foetus of seven or eight months are much simpler than in the male. He finds that the fissure of Rolando is more oblique in the male than in the female, and hence that there is more cerebral matter in front of it in the former and behind it in the latter. Dr. Passet has made careful measurements of twenty male and seventeen female brains, and finds that the fissure of Rolando is more oblique in the male than in the female, and is longer and more curved. It lies absolutely and relatively further back in man; hence there is more cerebral matter in front of it. The male brain is longer, broader, and higher than the female. As the male brain is the larger, it follows that the fissure of Rolando is more distant from both the coronal and lambdoidal sutures than in the female. The parieto-occipital is usually in

front of the lambdoidal suture in both sexes, but is more distant from it in the male. Clevenger, in a paper in the *Jour. of Nerv. and Ment. Dis.*, April, 1880, has very similarly stated the same facts.—*Alienist and Neurologist*.

Tractus Interradicularis Pontis.—Dr. Spitzka has noticed, during the course of recent investigations, a well-marked bundle of fibres in the pons, which, instead of running the ordinary transverse course of the major part of the superficial fasciculi, runs longitudinally. This fact, in itself, has been noticed by anatomists, but the singular relations of the bundle to certain important nerve-roots seem to have escaped them. It extends from the region where the eighth and seventh pairs enter the brain axis to the origin of the sensory root of the trigeminus, and to the naked eye it appears as if the roots of all these nerves received fibres from it. In one subject, remarkable for the deep plastic moulding of all the axial contours, in whom the *tractus transversus pedunculi*, the middle geniculate ganglion, &c., were unusually well marked, this fibre bundle was so distinct as to seem to merit a separate designation, and he proposes to term it the interradicular pons tract. In other subjects the innermost fibres of this tract leave their original direction to become transverse. Sometimes it has in part a gray colour.

Recessus Facialis.—Dr. Spitzka proposes this name for a fossa found at the lateral aspect of the medulla oblongata and on the posterior face of the pons. It is produced by the pontine overlap, and roofed in by the under-surface of the restiform column and fibres of the auditory root. It is a very characteristic feature of sections made transversely through the posterior edge of the pons, and in those striking the apex of the true olivary body. In such sections three gaps are noticed—a middle and two lateral ones. The middle one is the post-pontinal fossa, the two lateral ones are the facial recesses. This name is given because the facial nerve enters the recess, either skirting or partially embedded in the substance of the pons. It is an important region from its relations to the nerve-roots, and in one case it was found by Spitzka to be the seat of a neoplasm.

Hyaline Substance in the Perivascular Spaces.—Spitzka has found in three cases a peculiar material in those true perivascular spaces, which result under pathological circumstances. To this material the name hyaline substance has been given. In the first case, one of typhomania (acute or grave delirium), Spitzka was not certain

to what extent the employment of alcohol may have added an artificial element. In the other two, alcohol was not permitted to touch the specimen, and it was evident that the material had been deposited during life. In both these instances the subjects had, in a marked degree, suffered from syphilitic cerebral symptoms. In one there were numerous subdural syphilomata, in the other advanced ventricular and vascular lesions. The material was more consistent in the latter case, took carmine staining well; in the former it crumbled more and stained more deeply, probably owing to longer submersion in a strong bichromate of potassium solution. The exact significance of this lesion is not known. Advanced disintegration of the ganglionic cells of the nuclei of the medulla accompanied it in the case where there were advanced ventricular and vascular lesions. Aside from mechanical dehiscence of pigmented cells, one specimen was found in which a (rapidly) swollen mass of hyaline material had blasted the protoplasm, so to speak, into numerous fragments, one of which still adhered to this mass.—*The American Journ. of Neurol. and Psychiat.*

[I have frequently met with "hyaline material" in the perivascular spaces of the brains of the chronic insane. In my earlier examinations I was inclined to regard this as distinctly morbid, and the result of a pathological process. As my specimens were, however, all prepared in iodised alcohol, and as the quantity of the material appeared to depend upon the method of preparation, I have lately come to regard this material as an artificial product, resulting from the action of the alcohol, and possibly of other reagents also, on the rapidly changing chemical constituents of the dead brain tissue. The material that I have seen in the perivascular spaces differs, however, from that described by Spitzka, as it invariably refused to take the staining material, appearing in transparent masses, of irregular outline, shaded at the edges according to the character of the illumination, and often extending over the edge of the canal on the brain substance outside; and I have seen these transparent masses freely movable in the interior of the spaces. In several cases I have, however, met with large ovoid or rounded bodies lodged in the nervous tissue itself, which readily took carmine or logwood, and which were much more distinctly organised. These, to a certain extent, resembled the so-called amyloid bodies, but were much larger and more irregular in outline. In a series of sections of the medulla oblongata, where the functions of articulation had become almost extinguished during life,

regions of the nerve strands and nuclei are stuffed with these bodies, which seem to have created regular loculi for themselves, and to have encroached upon or displaced the normal elements. Whether these latter are truly morbid, or are merely artificial products, it is difficult, in the light of the recent investigations of Drs. Savage and Plaxton, to say. I can myself, however, hardly think that these well-defined bodies are altogether of *post mortem* formation, though doubtless the clear soap bubble-like, ill-defined masses occupying the perivascular spaces, and sometimes overlying the surface of the sections, are the product of such changes.—*Rep.*]

The so-called Neurokeratin.—A very thorough and careful examination of the structure of the medullated nerves undertaken at the laboratory of Ranvier, by Waldstein and Weber, yielded the following results:—The pancreatic ferments which have been employed by Ewald, Kühne, and others, in similar studies, have very different digestive powers, varying with the animal species from which they are obtained, the state of its digestion at the time of slaughter, and the method followed in extracting it. There is also considerable difference in the action of the same pancreatin on the nerve tubes of different animals; thus, the membrane of Schwann and the axis cylinder of the frog are digested by pancreatin after treatment with alcohol, while the same tissues in the rabbit are not digested. All these and other facts show that one and the same tissue may have fundamentally different chemical characters in various animals. As is well known, Ewald and Kühne—observing that after subjecting nerves to the action of boiling alcohol and ether the dissolving myelin left behind it a gnarled trellis-work (*knorriges Gerüst*) consisting of reticulated sheaths, one immediately surrounding the axis cylinder, the other duplicating the membrane of Schwann, which two were mutually united by radiating spokes, and finding that they resisted the digestive action of pancreatic ferment (trypsin)—concluded that they had demonstrated the existence of a special substance, which they denominated neurokeratin. They further identified this substance—with some reservation as to its exact identity—in the neuroglia. Confirmatory observations followed: Tizzoni, for example, found the gnarled trellis-work in the normal nerves, discovered that it disappeared in the degenerating ends of divided nerves, and that it reappeared in regenerating ones. But a more critical analysis induced other observers to question that this structure was preformed or existed in the shape described by Ewald and

Kühne. Thus Hesse, from a careful observation of bizarre forms assumed by myelin when submitted to the action of water, asserts that the corneous substance could not possibly be a distinct morphological element of myelin, but rather must be diffusely mingled with it, and Pertik gave the death-blow to the alleged discovery by showing that the architecture of the gnarled trellis-work differs according to the degree of concentration of the alcohol employed in bringing it out. Notwithstanding these contradictions, many high authorities—such as Schwalbe among anatomists, and Hoppe-Seyler among chemists—have accepted the existence of the neurokeratin, the latter with some reservation. The authors of the paper from which these historical facts are gleaned submitted the entire question to the test of an elaborate series of experiments, employing the pancreatin of Dufresne, which has a high digestive power, so that in twenty minutes it digested a floccule of boiled fibrin completely, at a temperature of 40° C., as well as several kinds prepared by themselves. They found that the trellis-work obtained by the procedure of Ewald and Kühne did not take carmine or osmic acid staining, but stained very well in anilin red, hæmatoxylin, and gold chloride. A number of plates accompany the paper under consideration, showing the different appearance of the trellis-work in the frog and rabbit, it being more like a true network in the former than in the latter. The authors repeatedly make use of the expression “fat” as an element of the myelin, though evidently aware that there is no true fat in the nervous structure. There is certainly no good reason for retaining the term. In order to test the statements of Ewald and Kühne as to the substance in the so-called neuroglia which resisted the action of the pancreatic ferments, Waldstein and Weber subjected cords of oxen to the freezing process, and made sections therefrom which could be submitted to a magnifying power of four hundred diameters. They then submitted the section to the action of pancreatin, at a temperature of 40° C., and found that the “doubtful” fibres of the neuroglia became thinner, and showed at certain intervals refractive nodules, to disappear altogether in about twenty minutes, leaving nothing behind to mark their former site than the refractive nodules in question. An interesting observation was made on the cord of an ataxic patient. Here the fibrillæ were well developed in the sclerosed portion, but they disappeared entirely in from fifteen to twenty minutes when subjected to the above procedure, while the septa coming from the pia mater

showed no change whatever. This certainly shows that the fibrillæ of the neuroglia are an entirely distinct substance from the connective tissue derived from the pia mater. It is well known that if absolute alcohol be injected into the fresh spinal tissues of a rabbit, there may be dissociated nerve tubes which exhibit the irregular arborisation around the axis cylinder described by Henle and Merkel. These present a striking resemblance to the trellis-work found in the peripheral nerves by Ewald and Kühne. This leads one to believe that the neurokeratin of the nerve centres is, like that of the peripheral nerves, the result of a myelin disintegration. The reason certain observers found the so-called neurokeratin in the ganglionic masses of the brain can be readily accounted for by the fact that, contrary to the belief and knowledge of many, there are medullated tubes in the gray substance itself. Nor does it require the action of osmic acid, recommended by Exner, to prove this, in part, at least. All the facts observed show that "neurokeratin" is found only where myelin occurs, and must therefore depend on it for its formation—in other words, must be a phenomenon of the dissociation of the myelin itself.—Dr. E. C. Spitzka, in the *Am. Jour. of Neurol. and Psychiatry*.

Method of Preserving the Brain.—The following process has been given by Germa (*L'Encéphale*):—(1) The brain is hardened for fourteen days in a saturated solution of bichromate of ammonium; (2) it is washed and placed for one day in a mixture of carbolic acid 1 part, alcohol 1 part, water 8 parts, and glycerin 10 parts; (3) it is washed, and then allowed to dry in the air, and covered with three or four coats of varnish, the different parts being coloured, if necessary, with variously coloured metallic powders; (4) over all is laid a coat of painter's varnish for the sake of preservation.

[This process, it will be remarked, resembles Giacomini's; in his, however, chloride of zinc is used in the first instance, and the immersion in glycerin is more prolonged. From experience, I can speak as to the excellent results it gives.—*Rep.*]

Nervi Nervorum.—In a preliminary communication to the Medico-Chirurgical Association, Mr. Victor Horsley has shown, and demonstrates by numerous and convincing specimens, the existence of true sensory nerves supplying nerve trunks—of *nervi nervorum* as opposed to the *nervi vasorum* or vaso-motor nerves, already described as supplying the blood-vessels of the epineurium. These *nervi nervorum* come off at right angles from a primary bundle or cutaneous branch, and terminate, as Mr. Horsley's preparations showed,

in end bulbs lying in the perineurium. They have, up to the present time, been concealed in osmic acid preparations by the fat cells of the epineurium, but can be seen if, as Mr. Horsley suggested, the specimens be taken from an emaciated dropsical subject. This demonstration will afford a safe foundation of fact for any theories as to the cause and treatment of the lightning pains of tabes dorsalis or other neurotic affections.—*Brain*.

Stimulating Percussion.—Dr. J. Mortimer Granville, in a communication to the Physiological Society, summarises the results obtained with his percuteurs under the two following heads:—

1. "Sensory Phenomena;"
2. "Motor Phenomena."

1. *Sensory Phenomena*.—The sensory impression produced by percussion at a fairly high speed is divisible into two phases or stages: (a) the primary or direct—that is, the strictly local or immediate sensation, which is either slight tingling, or pricking, or smarting; (b) the secondary or indirect, which is partly propagated and partly induced. This varies greatly with the individual subject, and apparently in proportion to the density of his tissues rather than the general quality of "sensitiveness," for strongly built and healthy men often feel the secondary effects of percussion more distinctly than "highly sensitive" women. The galvanometer does not indicate any evolution of electricity.

2. *Motor Phenomena*.—The motor phenomena which percussion is capable of eliciting are either directly reflex, or so far "organised" as to be independent of the will. Consequently, if the centres with whose action consciousness is associated come into operation, they inhibit the response of the normally subordinate centres. It is only when either the attention is diverted, or there is some block in the line of communication between the volitional and the automatic or reflex centres, so that the last-mentioned are able to act independently or in spite of restraint and control, that motor phenomena can be obtained by percussion. In locomotor ataxia the tibialis anticus, the peronei, and the extensors can be thrown into a spastic condition with a contracture nearly resembling cramp, but the moment the patient brings the will into action he can overcome the contracture, and the phenomenon disappears. A notable fact is the induction of movements in an opposite limb by percussion on the other, although the two legs have been extended on different chairs, and every precaution has been taken to avoid the transmission of the mechanical stimulation.—*Journal of Physiology*, Vol. V., No. 1; abstracted in *Am. Journ. of Nerv. and Ment. Dis.*

The Intra-cerebral Course of the Hypoglossal Nerve.—Notwithstanding that the function of speech has now for many years been a favourite subject of physiological and pathological observations, there still remains much to be done before we can be said, in any complete sense, to understand it. Dr. F. Raymond and M. Artaud (*Archives de Neurologie*, Nos. 20 and 21, 1884) have recently made a painstaking and valuable contribution to the subject of the intra-cerebral course of the hypoglossal nerve. The groundwork of clinical fact and the inferences built upon it are so clearly and logically laid down that it is difficult in abstract to do justice to their work, which involves a wider range than the actual title of their paper. In writing their paper the authors had not been acquainted with that by Dr. Ross "On Glosso-Labial Paralysis of Cerebral Origin," in *Brain*, July, 1882, and their results are, therefore, the more valuable as agreeing with his. Affections of speech owing to paralysis of the muscles of articulation have been observed from—(1) cortical lesions; (2) lesions of the centrum ovale; (3) lesions of the internal capsule and crus cerebri; and (4) lesions of the pons Varolii. That a lesion of the posterior third of the third left frontal convolution will cause aphasia is now a well-substantiated fact; but that a lesion of the inferior part of the ascending frontal convolution produces glossoplegia or paralysis of the muscles of articulation, is a fact not yet so well substantiated. Of this last the authors cite six cases. In four of these the lesion was located in the inferior part of the ascending frontal convolution right or left, the result being convulsion or paralysis in the muscles supplied by the hypoglossal of the opposite side from the lesion; and the third frontal not being affected, in no case was there aphasia. In two cases both aphasia and glossoplegia was present, the lesions being bilateral, and affecting both the inferior and ascending frontal convolutions. From experiment and clinical observation it would seem, according to Charcot and Pitres, that the inferior third of the ascending frontal convolution presides also over the movements of muscles supplied by inferior branches of the facial; and, recently, M. Lépine has reported cases of permanent trismus accompanying lesions of this area, or of the subjacent white matter. It forms, therefore, the cortical origin of the hypoglossal, inferior facial, and motor root of the trigeminus. Tracing the hypoglossal fibres downwards, Dr. Raymond and M. Artaud cite seven cases, one recently observed by themselves, of glosso-labial paralysis resulting from injury to the inferior frontal fasciculus of Pitres arising from

the part of the cortex above designated. While the principal symptoms of the progressive bulbar paralysis of Duchenne—viz., paralysis of the tongue, lip, and velum palati, are present in those cases, the differential diagnosis is comparatively easy. The symptoms imulating Duchenne's paralysis are less marked, and differ in their mode of onset. In glosso-labial paralysis of cerebral origin the symptoms commence abruptly, frequently with an apoplectic seizure, accompanied by fall and loss of consciousness, and when the seizure passes off the patient speaks with difficulty, and cannot move the tongue or approximate the lips. These symptoms are sometimes accompanied by facial paralysis, hemiplegia, and intellectual defects, such as are observed in cerebral softening, or by convulsions and epileptiform attacks. In Duchenne's paralysis the disease is progressive, attacking successively tongue, lips, and palate, cerebral symptoms being absent; while, on the other hand, a group of bulbar symptoms are present which are wanting in glosso-labial paralysis of cerebral origin—viz., laryngeal (progressive weakness of voice), pulmonary (attacks of suffocation), and cardiac (syncope). The first disease is also distinguished by the presence of the reflexes, the absence of muscular atrophy, and the conservation of electrical excitability. Death results in the first from fresh cerebral hæmorrhage or softening, or from intercurrent disease of lung or kidney; in the second, from an attack of dyspnœa or syncope. The fibres of the inferior frontal fasciculus, above referred to as arising from the inferior part of the ascending frontal convolutions, pass downwards in the internal capsule at the *genu* which divides its anterior from its posterior segment, forming what authors term the "geniculate" fasciculus, bounded in front by the "intellectual" fasciculus, and behind by the "pyramidal" or motor fasciculus (from the limbs), and the "sensory" fasciculus. Without being able to render actual proof, Dr. Raymond and M. Artaud believe, with a certain probability, that the fasciculus of aphasia and that of glosso-labial paralysis pass down in different tracts through the internal capsule and crus cerebri, the former occupying a position intermediate between the intellectual and geniculate fasciculi. As to the further course downwards of the cerebral fibres of the hypoglossal through the pons, the authors quote three cases which lead them to believe that they occupy in the pons the part internal and posterior to the motor pyramids.—Dr. Anderson, in *Brain*.

III.—NEURO-PATHOLOGY AND PATHOLOGICAL ANATOMY.

Charcot on Aphasia.—These lectures, previously unpublished, have been reported (*Gazz. degli Ospitali*) by Dr. Rummo, with the consent of the author. Aphasia is divided into four varieties, depending upon the elements of which speech is composed. Two are motor and two sensory. The motor forms of aphasia are—first, loss of the memory of the processes used in articulating; and, secondly, loss of the memory of the processes used in writing—agraphia or aphasia of the hand. There is no paralysis; other kinds of movement are performed without difficulty. The motor memory for those special movements is alone destroyed. The sensory forms of aphasia are—first, visual aphasia, or loss of memory for written signs (*word-blindness* of Kussmaul); and, secondly, auditory aphasia, or loss of memory for spoken words (*word-deafness* of Kussmaul). Professor Charcot has had the good fortune to see the two motor forms and the visual absolutely separate and uncomplicated. One patient was unable to speak, although he could read, express himself in writing, and understand what was said to him. One instance of pure agraphia was observed. The patient could speak, read, and understand what was said to him. Another patient could speak, understand what was said, and, though able to express himself in writing, was unable to read, and it was only by retracing the characters that he was able to spell out even what he had himself written. The cases of word-deafness that have been recorded have been very rare, and the author does not think that they are at all conclusive. In regard to the localisation of the visual centre, experimental research is put aside for two reasons. In the first place, it is not safe to argue from monkeys and dogs to men; in the second place, the results obtained by different investigators are at variance—Ferrier, for example, placing this centre in the *pli courbe* (angular gyrus), Munk in the occipital lobe. The centre for the motor memory of articulation is fixed by necropsies for right-handed persons in the foot of the third left frontal convolution. One case is on record in which the island of Reil was alone affected. The motor memory for writing is ascribed by Exner to the foot of the second left frontal convolution. The visual and the auditory memory for words are seated respectively above and below the horizontal branch of the fissure of Sylvius, the visual centre being in the *pli courbe*, the auditory in the first temporo-sphenoidal convolution. It may be added that the author and Pitres are preparing a work to

establish their view that all the motor centres of the cerebral cortex are grouped in the two vertical convolutions respectively in front of the fissure of Rolando and behind it—namely, the ascending frontal and the ascending parietal. It should be mentioned that hemiopia, or more or less narrowing of the field of vision, usually accompanies word-blindness (loss of memory of written signs)—a fact generally unobserved. Hemiopia is, therefore, sometimes due to a cortical and not to a basilar lesion or affection of the optic tract. It may be added that the honour of having sown the first germs of the theory of word-blindness and word-deafness is assigned to Broadbent. Although the author did not coin special names for these disorders of speech, he and Bastian must be considered forerunners of Kussmaul and Wernicke.—*London Medical Record*.

Word-deafness.—Since the distinction was drawn between sensory and motor aphasia by Wernicke and Kussmaul, numerous cases of pure sensory aphasia or word-deafness have been reported. But a limited number of these cases, however, have been followed by autopsy, and hence each new case reported, which is accompanied by a careful record of a *post mortem* examination, is of interest both to advocates and opponents of the theory of localisation. Dr. Albert Rosenthal, of Warsaw, publishes the following cases in the January number of the *Centralblatt f. Nervenheilkunde*:—An apothecary, thirty-seven years of age, had an attack of apoplexy in December, 1878, producing a right hemiplegia, which gradually passed off, so that in three months no evidence of paralysis remained. In August, 1879, the man had a second attack, beginning with general convulsions, and leaving him paralysed on the left side and aphasic. The convulsions recurred every third or fourth day, lasting a few minutes, and being attended with loss of consciousness. After a few weeks they became less frequent, and he finally recovered, so that in three months the aphasia had disappeared, and the left hemiplegia was scarcely noticeable. His third attack occurred in April, 1880, leaving him completely paralysed on the left side, aphasic, and deaf. These, except the deafness, remained, and in September, 1882, he was admitted to Dr. Rosenthal's asylum in Warsaw, as he was said to be subject to fits of maniacal excitement. On examination it was found that the entire left side, including the facial and hypoglossal nerves, was paralysed, and the extremities were in a state of contracture. The deep reflexes in the left leg were markedly exaggerated, and were radiated to the opposite limb. Sensations of pain were perceived

equally on both sides, but other sensations could not be tested on account of the aphasia. The aphasia was a sensory aphasia. The patient was not deaf; he heard the slightest sounds, but he was entirely unable to understand what was said to him. When asked his name, he neither attempted to answer, nor did he offer to write a reply, although, when the question was shown him in writing, he wrote his name at once. When asked to put out his tongue, or if his head ached, he made no answer. He understood gestures and motions, however, perfectly; and when his head was pointed to, he indicated by shaking it that he had no headache; and by appropriate signs he was made to put out the tongue. He indicated that he could not understand, by putting his fingers to his ears when anyone spoke to him. He understood writing to some extent, but was often inaccurate in his written replies, showing that the power of reading was impaired. He could speak only five words. He was perfectly conscious of his condition, and frequently cried at his inability to speak. He knew his surroundings and recognised friends. He remained under observation a year, showing no signs of insanity, and no evidence of a change in any way. He died of pneumonia in October, 1883. The autopsy showed two lesions in the brain. The first was a defect of substance on the surface of the right hemisphere, involving the paracentral lobule in its external part, the posterior four-fifths of the posterior central convolution in its entire extent, and the adjacent portions of the convolutions of both parietal lobules, as far down as the margin of the Sylvian fissure. It was three and a half by four cm. in extent, and eight mm. deep. The defect involved the cortex and the white substance just beneath it, and a tract of descending degeneration was traced through the internal capsule and pons into the left pyramidal column of the cord. The second lesion involved the first temporal convolution of the left hemisphere in its posterior and upper third, together with the adjacent part of the second temporal convolution. It was one and a half by two cm. in extent. The cerebral tissue was changed into a hard red substance. Microscopic examination showed distended blood-vessels, fatty corpuscles, pigment cells, and fatty degeneration of the ganglion cells in the parts around both lesions. The diseased tissue had not been examined when the case was published. After alluding to a similar case of lesion in the posterior central convolution reported by Charcot, and attended by a similar paralysis with contracture, Dr. Rosenthal discusses the subject of word-deafness, stating that this is the eighth case in

which the lesion has been found limited to the left first and second temporal convolutions. The stationary character of the lesion and its long duration (two and a half years), taken with the absolute lack of any signs of recovery, proves that one hemisphere cannot do the work of the other, and establishes the localisation of the power of understanding spoken words.—*Am. Journ. of Neurol. and Psychiat.*

Cerebral Visual Affections in Paretic Dementia.—Stenger (*Archiv für Psych.*, B. XIII.) has studied eight cases of visual defects in paretic demented, and has been able to supplement thereby five autopsies. In one of the cases intracranial disease had attacked the speech and sight centres. The patient at every attack lost for about ten days physical perception of all visual objects. Memory of most objects returned, but a few were permanently forgotten. After many attacks no optico-psychical images were remembered—all perception of visual objects was lost. In a second case, after decided right hemiplegia, cerebral amaurosis and aphasia occurred. After four weeks these disappeared, but reappeared after a second attack, and were accompanied by destruction of the sense of feeling. A few days after this, vision was completely lost in the right eye (Munk's cortical amaurosis). A third attack was followed by loss of consciousness and death. On autopsy there were found extensive left frontal lobe atrophy, pial cloudiness and thickening—most marked in posterior convolutions—and general firm pial adhesions to the cortex. Right hemianopsia occurred whenever the cortex or medullary fibres leading to it from an occipital lobe were destroyed. The defect in the visual field was greatest in the right eye. Left hemianopsia occurred with disease of the right occipital lobe. According to the amount of destruction, the hemianopsia was partial or total.—*Journ. of Nerv. and Ment. Dis.*

The Visual Areas of the Brain determined by a study of Hemianopsia.—Dr. M. Allen Starr (*Am. Journ. of Med. Sci.*, January, 1884) publishes a collection of thirty-two cases, with carefully recorded autopsies, which confirm Munk's conclusions derived from seven years' experimentation on animals. Munk gives, as a final statement of his work, the following conclusions:—

1. Occipital lobes of the brain are necessary for the perception of visual impressions.

2. Each occipital lobe is in functional relation with both eyes in such a manner that corresponding halves of both retinal areas are projected upon the lobe of the like-named side.

The peculiar symptoms of blindness in corresponding halves of both eyes, called "lateral homonymous hemianopsia," was long thought to be due in every case to a destruction of one optic tract. Prior to five years ago all the cases on record supported that conclusion, but since then numerous cases have been published that demonstrate that it may also be produced by a lesion of the pulvinar of one optic thalamus, or by a lesion of one occipital lobe, situated either in its white matter, which Wernicke has proved to be a tract connecting the optic thalamus with the lobe, or situated in its cortex. The author brings forward two groups of cases. In the first group, which consists of five cases, there was hemianopsia, with lesion of one optic thalamus. In the second, of twenty-seven cases, there were lesions of the optic lobes. He adds that cases of hemianopsia produced by lesion of one optic tract are so well known and so frequently reported that it is not necessary to give them. In eight of the cases cited, hemianopsia was the only permanent brain symptom present. In one of these there was a lesion of the optic thalamus; in two in the occipital lobe and the thalamus; in the remainder it was confined to the occipital lobe. "These cases alone," says the author, "would prove the fact that the visual area of the brain is located in the occipital lobe." Consciousness is associated with cortical activity only—the thalamus is but a ganglion interposed in the course of the fibres of the cortex, and not the seat of the conscious perception of sight which is in the occipital lobes. In the other cases recorded, where other symptoms than hemianopsia were noted, such as hemiplegia, monoplegia, unilateral convulsions, and aphasia, there were other lesions present which would account for these; therefore the conclusion arrived at from pathological researches, is that these symptoms belong to the occipital lobes, and consequently to them must be referred the function of sight.—*Journ. of Nerv. and Ment. Dis.*

Morbid Somnolence.—At the meeting of the New York Neurological Society on the 4th March, 1884, Dr. C. L. Dana read a paper on "Morbid Somnolence," relating a number of cases illustrating different forms of this affection. These forms he classified as follows:—

1. Epileptoid sleeping states.
2. Hysteroid sleeping states, including (a) spontaneous "mesmeric" sleep; (b) trance and lethargic states.
3. Morbid somnolence, the expression of a distinct neurosis (narcolepsy).

The author's first case (illustrating class 3) was that of a young man, of healthy family and personal history, who would go to bed at the ordinary hour, and could not be aroused till noon, or afternoon or evening, of the next day. 'This would continue for a week or so, and then remit.

A second case (illustrating class 2) was that of a young lady who had short attacks of catalepsy, cataleptic *petit mal*, alternating with sudden attacks of sleep. These came on several times daily.

Three other cases (illustrating class 3) were of neurasthenic persons who had persistent drowsiness not attributable to any nutritive or organic disorder. Dr. Dana also reported a case furnished by Dr. L. Pietzel illustrating the epileptoid sleeping states.—*Am. Jour. Nerv. and Ment. Dis.*

Narcolepsy.—Dr. Matas (*New Orleans Med. and Surg. Journ.*, Jan., 1884) comes to the following conclusions on this subject:—1st. 'That a disorder apparently functional in character, idiopathic (because its cause is unknown), characterised by abnormally and frequently repeated sleep-spells, exists, and until its ætiology and pathology have been ascertained, deserves a separate and independent place in the nosology. 2nd. That in view of the periodicity of its attacks, and the facial pallor accompanying it, as also its association with functional nervous disturbance like neuralgia, indicate that it is a vaso-motor affection. 3rd. Malaria may exert causative influence. 4th. The sleeping sickness of Africa and allied conditions of specific origin do not belong to the same category.—*Alienist and Neurologist.*

Hughlings Jackson on Evolution and Dissolution of the Nervous System (Croonian Lectures for 1884, *Brit. Med. Journal*, March 29th, *et. seq.*).—The Croonian Lectures were delivered in March of this year at the Royal College of Physicians by Dr. Hughlings Jackson, who chose for his subject the "Evolution and Dissolution of the Nervous System," and gave what may be regarded as a highly condensed summary of the results of the work which has occupied him for many years. At frequent intervals Dr. Jackson has published in somewhat fragmentary form the results that he has arrived at in localised districts of his field of work; but these publications have been distributed over so long a period and disseminated in so many journals that they are not readily available for reference. These lectures are therefore welcome as a recapitulation in accessible form of much that has appeared before, as giving the latest outcome of Dr. Jackson's labours, and as presenting his

views in a more unified, or, as he himself might term it, a more integrated, shape than they have yet assumed.

Dr. Jackson regards the central nervous system as a hierarchy, in which each grade controls the one below, and is controlled by the grade above. Each grade represents over again and co-ordinates in more elaborate combinations the parts represented and co-ordinated by the grade below; and every part or region or centre of a grade represents a larger share of the organism than any corresponding part of the grade below—a more limited share than any corresponding part of the grade above. Thus each centre in the lowest grade represents but a limited portion of the organism, and each centre in the highest grade represents the whole of the organism, but in no two of the latter centres is the whole organism represented in quite the same way. The whole of the grades are grouped in three main divisions—lowest, middle, and highest centres. Of these the lowest are the most completely organised, the highest the least completely organised. When disease attacks the nervous system there are always two sets of manifestations—negative and positive, loss of function and excess of function. The functions lost are those of the centres diseased; the functions that are excessive are those of centres subordinate to the centres diseased, and permitted to act excessively by the removal of the control normally exercised by the centres now diseased. The centre whose function is abolished may belong to the lowest, to the middle, or to the highest division, affording examples of local dissolution. On the other hand, there may be a uniform dissolution, the whole of the highest grade of all being first lost, and successive grades being pared off, as it were, as if in layers. Dr. Jackson applies these doctrines with many subsidiary hypotheses to every kind of nervous disorder, from atrophy of muscles to insanity, and from giddiness to coma; and from his vast knowledge of diseases of the nervous system he is able to supply an apparently limitless profusion of instances to every section and sub-section of his subject.—Dr. Mercier, in *Brain*.

The Symptoms of Basedow's Disease.—Dr. Pierre Marie, in a monograph on this subject, discusses a certain number of marked symptoms not usually described in association with the malady, or which have been considered as purely accessory. These, on the contrary, M. Marie believes to be intimately connected with the affection, constituting peculiar and characteristic features sufficient to enable us to detect the disorder, even when the special symptoms

of goître and exophthalmos are wanting. The general conclusions arrived at are:—

1. Tremor is a frequent symptom of Basedow's disease, and is probably almost always present.

2. This tremor has special characters which permit it to be distinguished from others.

3. The presence of goître or exophthalmos, either together or singly, are not essential elements of the disease.

4. When this tremor accompanies palpitation of the heart without notable augmentation of the temperature, Basedow's disease may be suspected. The diagnosis will be confirmed by the presence of one or more of the following symptoms:—Local or general sweating, boulimia, insomnia, cough without expectoration, or abnormal physical signs in the chest.—*Brain.*

Ballett on Exophthalmic Goître (Revue de Médecine, April, 1883).—The general results at which the author arrives after an inquiry into the subject are as follow:—

1. To the classical symptoms of exophthalmic goître (palpitations, swelling of the neck, tremor) there are occasionally added others, which, like them, are attributable to disorders of the nervous system.

2. These symptoms are, on the one hand, *convulsive* (epileptic or epileptiform attacks), or, on the other, *paralytic* (hemiplegia or paraplegia); also pretty frequently albuminuria, glycosuria, or simply polyuria, may be observed.

3. These convulsive or paralytic complications appear to arise not as the direct result of Basedow's disease, but of another coincident neurosis (epilepsy hysteria).

4. Sometimes certain convulsive phenomena (epileptiform attacks) seem intimately associated with exophthalmic goître itself, and the special clinical conditions under which they are manifested authorise us in connecting them with disturbance of the cerebro-bulbar circulation itself, occasioned by perturbation of the action of the heart.

5. Among the paralytic disturbances some are of minor importance, such as the weakness of the hands, the temporary paresis of one or both upper extremities, and the feebleness of the lower limbs. They may be looked upon as directly dependent either upon the tremor or on functional derangement of the cerebral circulation.

6. The polyuria, albuminuria, and glycosuria are probably more frequent than might be supposed from previous researches, and they indicate a derangement of the bulbar innervation.—*Brain.*

Microscopical Examination of the Sympathetic Ganglia in a Case of Exophthalmic Goitre.—Dr. W. E. Hughes records this case. The cervical ganglia were to the naked eye enlarged and grayish, but not hard. On microscopical examination they were found densely infiltrated with round cells, which pushed the nervous elements apart and pressed upon them. The tubules were compressed, distorted, and in some places destroyed. In some places they were invested with a pseudo-membrane of small, round cells, looking as though these might have been a slight inflammation of the tubules. The cells were in places indistinct, shrivelled, and compressed, their nuclei not discernible; in other places they were granular, with indistinct nuclei; in other places, again, they were crowded with brown pigment cells and granules; and, finally, some of them had entirely disappeared. The walls of the arterioles were thickened. The lymph spaces were dilated. In the semilunar ganglia the cells were indistinct, taking staining very poorly, and some of them seemed to have undergone a slight degree of peculiar hyaline change. The nuclei and nucleoli took staining well, and were perfectly distinct. The structure was otherwise normal. There was no infiltration of cells, or any enlargement of the vessels. The suprarenal capsules were normal.—*Alienist and Neurologist.*

Othæmatoma.—Dr. Bellangés (*L'Encéphale*, No. 1, 1884) has reported a case of hæmatoma which appeared in a case of what seems to be a hypochondriacal phase of alcoholic insanity rather than lypemania. The patient, without any special traumatic evidence, suddenly suffered from a swelling on the right ear, which for ten days increased, then remained stationary for eight, and had begun to decrease when the patient died from exhaustion. The hæmatoma was located in the inferior two-thirds of the antihelix and lobe of the helix. Its volume (at first that of a walnut) was on autopsy found to be reduced to one-third this size. The skin over the tumour was wrinkled, and the tumour gave uncertain evidence of fluctuation. A transverse section of the ear revealed a large excavation, which contained semi-fluid blood. The excavation was sinuous, and its edges hard. The skin presented nothing special. The perichondrium and the cartilaginous lamina enveloped by it were cut in two by a hæmorrhagic patch. The sanguineous exudation had provoked around it an inflammation, and the chondroplasts as well as the fibro-elastic tissue in the midst of which it was plunged had proliferated, and innumerable minute cartilage

cells and patches of connective tissue were noticeable on the edges of the tumour. The situation of the othæmatoma was not as exceptional as Dr. Bellangés seems to think.

IV. NEURO-THERAPEUTICS.

Treatment of Exophthalmic Goître.—From upwards of seventy cases, and fortified by the observations of von Dusch, Eulenberg, Meyer, Erb, and others, Dr. Chvostak regards the rational employment of galvanism as the most important part of the treatment of Basedow's disease. He recommends the ascending constant current applied to the cervical sympathetic on each side, one minute or less to the spinal cord (the anode at about the fifth dorsal spine, the cathode high up in the cervical regions); through the occiput (one pole at each mastoid process), and in certain cases also through the temples, for one minute or less, and weak, the patient feeling but slight sensation. Local galvanisation of the thyroid gland for about four minutes, the current to be reversed at the end of each minute. The applications should be made every day if possible. Good results were obtained—in the most severe cases cure or marked improvement being recorded. In three cases death resulted from excessive anæmia or from complications.—*Centralblatt f. klin. Med. Alienist and Neurologist.*

Strahan on Hypodermic Injection of Amyl Nitrite, followed by Epileptiform Convulsions.—Dr. Sidney Ringer has noticed the action of nitrite of amyl on the heart, and the strange effect sometimes produced on the nervous centres. He says:—"I have seen a case where a woman, immediately after a drop dose, turned deadly pale, felt very giddy, and then became partially unconscious, remaining so for ten minutes." And again:—"A delicate woman, after one-thirtieth of a drop, passed in a few minutes into a trance-like state." In a case described by Dr. Strahan (*Journal of Ment. Science*, July, 1884), a chronic maniac, aged fifty-three, had suffered for several days from severe lumbago. "A ten minim dose of a ten per cent. solution of nitrite of amyl in rectified spirits was injected hypodermically. Immediately after the injection the pain disappeared. He got up from the bed, and at my request stooped and touched the floor with his fingers. In, as nearly as could be guessed, about a minute and a half he suddenly became deadly pale, and sank back upon the bed. Then his face, head (bald), and neck became congested, and he was strongly convulsed for about half a minute. The convulsion affected the face and arms strongly, the legs

slightly; the teeth were ground, and the breathing was suspended. In a few minutes after coming out of this fit he was attacked by a second one, during which the heart's action became very faint. He was made to inhale some chloroform, and the fits did not return. The lumbago entirely disappeared. This observation is interesting, as inhalations of nitrite of amyl have been recommended, both in this country and in Italy, to check the recurrence of epileptic convulsions."

[Some time since I was present at an amputation through the lower third of the thigh for compound fracture of the leg, where diffuse cellulitis had occurred, with burrowing abscesses; the sufferer was an elderly woman, and her strength had been much exhausted by the profuse discharge; she took chloroform and ether well, but after the limb had been removed and the stump dressed, she did not recover consciousness, and the pulse was scarcely perceptible. A glass capsule of nitrite of amyl was then broken, and the contents dropped on a handkerchief, which was held to the nostrils; a few seconds had scarcely elapsed when the face and neck became turgid, the head was rotated, the eyes upturned, and a strong convulsive seizure immediately followed, which lasted about half a minute, the handkerchief being at once withdrawn, not more than a couple of whiffs having been inhaled. The convulsions affected the entire body, including the stump of the limb, but the head and upper extremities were most engaged. When the epileptiform seizure had passed away, the patient's colour was much better, the pulse fuller and stronger, and consciousness soon followed; though while the seizure lasted it was a critical moment, and it seemed almost as if death would supervene. I may add that the patient made a good recovery.—*Rep.*]

The Treatment of Epileptiform Neuralgia.—Mr. Walsham (*Practitioner*, July, 1884) writes that of all the therapeutic agents he has tried in the treatment of epileptiform neuralgia, opium is the one that has given the least disappointment. It must be given, however, in large doses, and it becomes a choice of evils either to bear the agony of this terrible malady, or to be reduced to the pitiable condition of an opium *habitué*. During the last few years Mr. Walsham has had a series of six cases of this form of neuralgia under his care. The first patient had suffered for ten years, but was relieved from all pain by having the infra-orbital nerve stretched. The second had had the neuralgia nine years; it was confined to the regions supplied by the auriculo-temporal and inferior dental

nerves ; both these nerves were stretched, and the relief from pain was complete. The third patient was sixty years old ; the pain was confined chiefly to the inferior dental nerve. This was stretched with great relief. The fourth patient had the inferior dental and infra-orbital nerves stretched, and has remained well ever since. The fifth, a man seventy-three years old, had the inferior dental nerve stretched, and was cured. The sixth patient had suffered fourteen years, and had undergone stretching of the supra-orbital and infra-orbital nerves on several occasions without success. Dr. Walsham at length removed Meckel's ganglion, and the whole of the superior maxillary nerve, after having forcibly stretched its proximal end, from the foramen rotundum to the spot where it emerged on the cheek. The patient experienced no bad symptoms, and had no pain afterwards.—Abstracted, in *London Medical Record*.

The Subcutaneous Injection of Perosmic Acid in Neuralgia.—Dr. Lipsburger, Assistant to Prof. Nicoladoni, in Innsbrück, writes to the *Centralbl. f. d. gesam Therap.*, March, 1884, on the “Subcutaneous Injection of Perosmic Acid in Peripheral Neuralgia.” In one case which came under his notice, neuralgia of the fifth nerve had existed for nearly nine years, during which time the supra-orbital and infra-orbital nerves had been resected once, and the inferior dental twice, the second time in its canal ; but the pain always returned after a short time. In October, 1883, the patient (a woman, aged forty-nine) came under Dr. Lipsburger's observation, suffering from intense neuralgia, coming on in paroxysms fifty to one hundred times a day, in the region of the supra-orbital nerve. Subcutaneous injection of perosmic acid was ordered, and a half syringe of a one per cent. solution was injected into the frontal region once a day. On the first day the patient had fifty attacks, on the second three, and on the following days one each, until the fifth day, when they ceased altogether. A relapse followed in four days, and eight attacks occurred in the next seven days ; after which the treatment had to be discontinued, as a portion of the skin of the forehead became discoloured, and subsequently sloughed. Another relapse in the inferior dental region was soon cured ; the skin in the neighbourhood of the injections also becoming greenish, like that of the forehead, but not proceeding to slough ; and the patient left the hospital in less than two months free from pain. The injection shows itself worthy of further trial in suitable cases ; but it is evident that the first beginning of discoloration of

the skin must be the sign to discontinue the treatment for a time, even at a risk of the temporary return of the pain, and it is probable that the injections ought to be less frequent than in the case quoted.—*London Medical Record*.

Reinhardt on the Treatment of Bed-sores in the Insane.—The *Deutsche med. Wochensch.* of November 7, 1883, reviews a paper by Dr. Reinhardt, of Hamburg, on the "Employment of Permanent Baths in the Treatment of Bed-sores in the Insane." The patient is laid on a cloth, which is suspended in a bath filled with water at the temperature of 99·5° F. to 101·75° F., to which some carbolic acid or naphthalin has been added. When the bath is covered in by an impermeable cloth the temperature does not sink more than 5·5 F. in twelve hours.

Nerve-stretching for the Relief of Pain.—In the "Bradshawe Lecture," delivered by Mr. John Marshall (*Brit. Med. Journ.*, Dec. 15th, 1883), some valuable information on this subject is given, gathered from various sources. Marshall inquires:—First—How far can a nerve be palpably stretched? Second—How much weight will a nerve bear? Third—The effect of stretching on the structure of the nerve. Fourth—The physiological effects of stretching. Fifth—Are the mechanical effects of stretching transmitted to the spinal cord? Sixth—The therapeutic effects.

To the first question he answers—That nerves are extensible to a certain degree, but to a much slighter extent than would be imaginable—not as extensible as arteries, but more so than tendons. After being stretched, a nerve, by virtue of the elasticity of its sheath, recoils to near its original length. A nerve, *e.g.*, that has been stretched $\frac{1}{2}$ of its length, recoils to $\frac{1}{8}$. A living nerve is more elastic than a dead one. The breaking weight differs with different nerves, according to their size, and has been found to differ extraordinarily with different experimenters. For the sciatic (after death) the lowest weight given is eighty-two pounds, and the highest 288 pounds (Trombetta). Stintzing found, as a result of experiments on living animals, that the great sciatic will bear 1·8 of the body weight. Hence, taking the average weight of the human body at 150 pounds, the great sciatic will bear 83·3 pounds. The safe strain for a healthy sciatic (man) may be reckoned at sixty pounds; for a diseased sciatic, thirty pounds.

The structure of the nerve is profoundly altered, the motor properties and the sensory properties are both diminished, though the sensory are not so intensely affected as the motor. The reflex

functions, curiously enough, are not so suddenly affected as either the motor or sensory, while the irritability—i.e., its power of conducting impressions, is increased by moderately strong pressure, and is diminished only when the tension is made very great. In regard to the fifth question the results of experiments have shown that while the spinal ganglia and sheaths of the roots may be mechanically moved, the cord itself is not disturbed. From an analysis of 252 cases, Marshall concludes that nerve-stretching is best adapted for the cure of neuralgia, in which the successes are very great. Out of 168 cases of neuralgia of all kinds in which the operation was done, 142 successes (including sixteen partial) are recorded, twenty-four failures (seven doubtful), and two deaths. The subcutaneous or “bloodless” operation is recommended as worthy of a trial. Horsley has found that he can stretch the sciatic on the dead body by this method, while among others, Lange, Trombetta, Stintzing (and, it may be added, Lepine and Shrady), have employed it for the relief of pain, and obtained satisfactory results. It certainly should be tried before resorting to the cutting operation. No evil results follow this method, which is performed as follows:—The patient is etherised, and the thigh is forcibly flexed upon the abdomen; the leg extended, and the foot flexed on the leg. The pressure should be firm, and kept up for five minutes. That nerve-stretching may not be entirely free from danger is shown by the following case, reported by C. Westphal, who cut down upon and stretched the right sciatic to relieve symptoms of spastic paralysis. These symptoms were relieved upon the side operated on, but there ensued permanent incontinence of urine and fæces, contraction of legs, and extensive acute decubitus. These symptoms gradually increased, hemianæsthesia and ataxia developed, and death occurred three years after the operation. *Autopsy.*—Small patches of degeneration in the brain, pons, and medulla; diffuse degeneration in the cervical and dorsal spinal cord; and multiple centres of degeneration in the right half of the lumbar cord. Westphal thinks that the latter were due to direct injury of the cord by the operation.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, M.D., F.K.Q.C.P., F. R. Met. Soc.

VITAL STATISTICS
Of the Eight Largest Towns in Ireland, for Four Weeks ending Saturday,
November 1, 1884.

Towns	Population in 1884	Births Registered	DEATHS REGISTERED			DEATHS FROM SEVEN ZYMOTIC DISEASES							Deaths from Phthisis	DEATH-RATE per 1,000	
			Total Number	Under 1 year	At 60 years and upwards	Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhoea		From all causes	From seven Zymotics
Dublin, -	351,014	696	743	128	179	-	-	38	1	7	29	36	90	27·5	4·1
Belfast, -	216,622	565	819	71	42	-	-	17	5	6	9	19	37	19·2	3·4
Cork, -	80,124	152	132	7	42	-	-	2	1	3	3	7	13	21·4	2·6
Limerick,-	38,562	102	49	11	12	-	-	2	-	-	2	3	4	16·5	2·3
Derry, -	29,162	78	55	12	12	-	-	5	-	-	1	2	6	24·5	3·6
Waterford,	22,457	25	47	6	10	-	-	7	-	-	1	5	5	27·2	7·6
Galway, -	15,471	32	17	5	7	-	-	-	-	-	-	-	2	14·3	-
Newry, -	14,808	31	19	1	7	-	-	-	-	-	-	-	1	16·7	-

Remarks.

In the eight selected towns included in the foregoing Table the highest death-rates are 27·5 per 1,000 of the population annually in Dublin, 27·2 in Waterford, 24·5 in Derry, and 21·4 in Cork ; the lowest rates are 14·3 in Galway, 16·5 in Limerick, 16·7 in Newry, and 19·2 in Belfast. The rate of mortality from seven chief zymotics ranged from 7·6 per annum in Waterford, 4·1 per 1,000 per annum in Dublin, 3·6 in Derry, 3·4 in Belfast, and 2·6 in Cork, to 2·3 in Limerick. In Galway and Newry no death was attributed to the principal zymotic diseases.

The recorded deaths represent a rate per 1,000 of the population annually of 20·6 in twenty-eight large English towns (including London, in which the rate was 18·9), 22·6 in the sixteen chief towns of Ireland,

25·6 in Glasgow, and 18·2 in Edinburgh. There is a slight increase (from 20·4 to 20·6) in the mortality in the English towns generally; and in London it has risen more decidedly—from 17·3 to 18·9 per 1,000 per annum. It has also risen somewhat in Glasgow; and although still low it has risen in Edinburgh likewise. In the Irish towns the rate of mortality has fallen slightly—from 23·2 in the previous four weeks to 22·6. If the deaths (numbering 8) of persons admitted into public institutions from localities outside the Dublin Registration District are deducted, the death-rate of that district becomes 27·2, while that of the portion of the district included within the municipal boundary is 30·2. In London the epidemic of smallpox unfortunately shows a recrudescence—the deaths were 97 against 52, 61, 97, 185, 155, 85, and 46 in the seven preceding periods respectively. The deaths from diarrhoeal diseases in the same city, which numbered 1,519, 836, and 272 in the three preceding periods of four weeks, fell still further to 154.

Acute febrile zymotics were returned as the cause of death in 118 instances in the Dublin district, compared with 158, 206, 99, 76, 62, 84, 82, 71, and 72 in the nine preceding periods of four weeks each, and a ten-years' average of 113·6 in the corresponding period. This group of maladies therefore again showed a decidedly lessened mortality. The 118 deaths included 38 from scarlet fever, 29 from "fever," 7 from whooping-cough, 36 from diarrhoeal diseases, and only one compared with 8 in the preceding period from diphtheria. The epidemic of scarlet fever continues to display a disquieting vitality, the deaths being 4 more than in the previous four weeks. Of the 38 fatal cases, 12 occurred in the South City Districts, 17 in the North City Districts, 6 in the Donnybrook (Pembroke Township) District, and 2 in that of Blackrock. Of the 29 deaths referred to "fever," 17 were ascribed to enteric fever and 10 to typhus, while in 2 instances the exact nature of the fever was either not specified or was ill-defined. The deaths from fever were 13 in excess of those registered (16) in the previous period. Twenty children under five years succumbed to scarlet fever, including not a single infant of less than twelve months. All the 7 victims of whooping-cough were under five years of age, including 2 infants of less than twelve months old. Among the 36 victims to diarrhoeal diseases were 26 children under five years, and of these 18 had not reached the age of one year. The deaths of 5 persons aged 60 years and upwards were attributed to diarrhoeal diseases.

Measles caused not a single death in any of the selected Irish towns.

Scarlet fever was fatal in 17 instances in Belfast, the deaths being 15, 11, 6, 1, 5, 9, 9, 12, and 14 in the nine previous periods. The deaths from this disease rose from 4 to 5 in Derry. Diarrhoeal diseases were credited with 72 deaths in the eight towns, against 120, 207, 57, 14, 26, 24, 32, 24, and 28 in the nine previous periods of four weeks each.

In London the weekly registered deaths from diarrhoeal diseases were 57, 44, 27, and 26 respectively.

In the Dublin Registration District 743 births and 696 deaths were registered, compared with 779 births and 757 deaths in the previous four weeks. The births were those of 351 boys and 345 girls. The deaths of infants under one year fell from 196 to 128; those of persons aged 60 years and upwards rose from 152 to 179.

The deaths referred to pulmonary consumption in the eight towns were 158, compared with 192, 182, 197, 243, 216, 244, 243, 212, 220, 189, 170, and 173 in the twelve preceding periods of four weeks each. In Dublin diseases of the respiratory organs are stated to have caused 128 deaths, against 94, 91, 64, 92, 108, 172, 155, 126, 157, 161, 185, and 165 in the twelve preceding periods, and an average of 123·8 in the corresponding four weeks of the previous ten years. The 128 deaths included 87 from bronchitis (average = 82·1) and 21 from pneumonia (average = 19·5). Of the 87 persons who succumbed to bronchitis, 12 were infants under twelve months, whereas 27 had passed their sixtieth year.

On Saturday, November 1, 1884, there were under treatment in the principal Dublin hospitals no cases of smallpox, one case of measles, 66 cases of scarlet fever, 27 of typhus, 14 of enteric fever, and 7 of pneumonia.

The mean temperature of the four weeks was 49·5° in Dublin, 48·8° in Belfast, 51·0° at Roche's Point, Co. Cork, 48·0° at Glasgow, 48·3° in Edinburgh, and 48·5° at Greenwich. The minimal readings of the thermometer in the screen were 33·8° in Dublin, 35° at Belfast, 36° at Cork, 30·5° at Glasgow, 32·1° in Edinburgh, and 32·1° at Greenwich.

METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N.
Long. 6° 15' W., for the Month of October, 1884.*

Mean Height of Barometer,	-	-	-	30·085 inches.
Maximal Height of Barometer (on 5th, at 9 a.m.),				30·729 „
Minimal Height of Barometer (on 27th, at 11 p.m.),				29·402 „
Mean Dry-bulb Temperature,	-	-	-	49·5°.
Mean Wet-bulb Temperature,	-	-	-	47·2°.
Mean Dew-point Temperature,	-	-	-	44·7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	-			·300 inch.
Mean Humidity,	-	-	-	84·1 per cent.
Highest Temperature in Shade (on 2nd),	-			64·5°.
Lowest Temperature in Shade (on 11th),	-			33·8°.
Lowest Temperature on Grass (Radiation) (on 11th),				29·2°.
Mean Amount of Cloud,	-	-	-	57·0 per cent.
Rainfall (on 14 days),	-	-	-	·834 inch.
Greatest Daily Rainfall (on 8th),	-	-	-	·170 inch.
General Directions of Wind,	-	-	-	W., N.W.

Remarks.

"The time o' the year between the extremes of hot and cold"—the past month was true to the description of October thus given by Shakespeare. Although a fine and dry month, on the whole, a spell of bitterly cold and wintry weather occurred in the second week, and this was in turn followed by a stormy period towards the close, with sudden and extreme variations of temperature. The barometer stood remarkably high in the anticyclone of the first few days—the exceptional reading of 30·729 inches being recorded in Dublin on the 5th, and on the other hand, the very low reading of 28·14 inches was observed on the W. coast of Norway on the 27th. The mean temperature deduced from observations taken daily at 9 a.m. and 9 p.m. was 49·5°; that calculated by Kaemtz's formula from the means of the daily maxima and minima was 49·2°—a value which is identical with the average mean temperature of the twenty years, 1865–84, inclusive (49·2°). The arithmetical mean of the maximal and minimal readings was 50·3°. On the 2nd the screened thermometer rose to 64·5°, and on the 11th it fell to 33·8°—the grass minimum on this occasion being 29·2°. The rainfall was only ·834 of an inch, but was distributed over as many as fourteen days. It was only a little more than one-fourth of the average rainfall for October, which is usually one of the rainiest months of the year, (average of the 20 years=3·025 inches on 17·2 days). The rainfall was smaller than that of any October in the twenty years, 1865–84, the nearest approach to it being ·856 of an inch in 1868. The rainy days, however, were 14—a number exceeding those in 1866 and 1869 (13 and 11 respectively). In Dublin no electrical disturbances were observed. Hail fell on the 10th and 26th. The atmosphere was foggy on the 2nd, 4th, 5th, 20th, and 21st. There was a hoar frost on the morning of the 11th.

On the 3rd an anticyclone formed, in which the barometer ultimately rose to 30·70 inches. This is periodic at the beginning of October. On the evening of the 4th a total eclipse of the moon was seen to great advantage in a cloudless sky—the totality lasting for one hour and thirty-three minutes. The anticyclone gradually dispersed after the 5th, and by 8 a.m. of the 8th a well-defined depression had appeared off the Hebrides. It grew deeper and travelled at first in a south-easterly direction to S. Wales, and then towards E. and finally N.E., disappearing over the Baltic. Strong N. winds and bitter cold prevailed in the British Isles during this period, cold rain, sleet or wet snow, and hail being reported from most stations.

The week ending the 18th witnessed a complete reversal of the conditions which had previously held. Premature winter with its piercing northerly winds and bitter cold gave place to warm and balmy, if damp and relaxing, westerly breezes, and the week closed with the temperature

almost of summer. There was a fine "after-glow" on the 15th. Quiet mild autumnal weather continued until the evening of the 23rd, when a heavy fall of rain occurred in the centre of Ireland—.95 of an inch being measured at Parsonstown.

From the 25th a stormy spell prevailed. At first it was cold, but on the 30th and 31st summer temperatures were experienced in Dublin—the maxima being 61·7° and 62·4° respectively. During the 25th and two following days a vast and deep depression was crossing the North-west of Europe, and violent W. to N.W. gales and storms prevailed in Ireland, Scotland, and the S.W. of Norway. At 8 a.m. of the 27th the barometer was down to 28·14 inches on the W. coast of Norway, while it stood at 30·35 inches in the N. of Spain. Hence gradients for W. to N.W. winds were very steep. On the night of the 27th another deep depression crossed Scotland from W. to E., but afterwards an area of high pressure formed over France, throwing a warm S.W. current upon the British Isles.

PERISCOPE.

Edited by G. F. DUFFEY, M.D., V.P. and F.K.Q.C.P.

FORMS OF SKIN DISEASES IN DIABETICS—DIABETIC DERMATOSIS.

KAPOSI has recently published a paper on this subject, which was read before the Vienna Medical Society. He has lately observed a peculiar form of inflammatory gangrene of the skin, for which he proposes the name diabetic bullo-serpiginous gangrene. The case was that of a woman, aged fifty-one years; early in May, 1882, a gangrenous inflammation appeared in several places on the left leg. This gradually became worse until January, 1883, when Kaposi saw her. There was an elongated gangrenous spot, of triangular form, on the left leg. A second gangrenous spot as large as a five-franc piece was situated below and posterior to the spine of the tibia. A third small spot was situated at the middle of the external border of the calf of the leg. On the anterior face of the leg, and somewhat surrounded by the gangrenous spots, were fifteen or twenty bullæ, whose size varied from that of a pea to that of a bean; they were oval or round, somewhat painful, and contained a muddy material. Some of them were broken, and below the skin was covered with a yellow eschar. The three gangrenous points presented, then, the following common characteristics. The convex border was encircled by a corona of flabby bullæ, the contents of which were muddy-looking. In the first third there was dry softening, they were pulpy in the middle third, and in the third next to the convex border there were

exuberant vegetations in process of cicatrisation. The skin situated between the gangrenous spots and the bullæ was normal. There was no fever. It is evident, then, that the gangrene caused certain isolated bullæ, and that its progress was caused by the production of bullæ, which process is opposed to separation, and it is equally evident that the character of the process is that of a bullo-serpiginous gangrene. In this case the analysis of the urine showed 5.15 per cent. of sugar; there was no polyuria or polydipsia. Under the use of Carlsbad water the proportion of sugar fell to .6 per cent. Up to this time the gangrene had made considerable progress, but was finally arrested, and replaced by granulations and cicatrices. After an interval of about one month the state of the patient was worse; new gangrenous spots had appeared, always with the same characteristics. The patient then gradually grew worse and died about a month afterwards. Kaposi shows that, as far as gangrene is concerned, it gives origin to the bullæ, and he states that one of the characteristic signs of diabetic gangrene is the appearance, in disseminated spots and in certain regions, of cutaneous lesions of serpiginous course, with consecutive reparation and delimitation to the derma, the above described case being a striking example. At the same time Kaposi insists on the community of the origin of all diabetic dermatoses, and claims that their common cause is the impregnation of the tissues with sugar. That the tissues are thus impregnated is beyond question. The excitation caused by this impregnation causes alteration of the sensitive nerves, which gives rise to pruritus; then alteration of the secretory and vaso-motor nerves, as a consequence of which anidrosis, urticaria, &c., are produced, and then, by direct irritation, inflammation of the vascular walls and other tissues. These last present but little tendency to inflammatory proliferation, but, on the contrary, a disposition to necrobiosis. It may be that a feeble, intermittent excretion of sugar, or a diabetes of long duration, may bring about, after a gradual tolerance of the tissues is established, a preponderating proliferation with but feeble destruction of tissue. If this be admitted, Kaposi feels authorised in adding a new variety to the forms of diabetic dermatosis—viz., diabetic papillomatosis. He has seen one case of this in a physician, aged sixty years, of Rio de Janeiro, who has had diabetes for twenty years.—*Annales de Dermatol. et Syphil.*, Jan. 1884, and *American Journal of the Med. Sci.*, April.

CAUSTIC APPLICATIONS TO HYPERTROPHIED TONSILS.

DR. J. J. CHISHOLM, calling attention to the anatomical structure of the tonsil, as a spongy gland full of holes, made up of infoldings of mucous membrane, notes that a probe will enter without impediment into any of these openings in the hypertrophied gland and will sink down into its innermost depths. These convolutions increase immensely the mucous

surface of the tonsil and at the same time the nervous supply of this concealed mucous surface is much less than that of the exposed surface, so that caustic applications to the inner surface of the crypts is comparatively painless. He finds the chloride of zinc the most available and least annoying to the patient. His method of making the application is as follows:—A piece of wire, the size of a fine knitting needle, is slightly roughened for a half inch at one end so that it may firmly hold a fibre of absorbent cotton twisted upon it. This cotton wrapping will hold enough of a saturated solution of chloride of zinc for application to one of these crypts to the very bottom of which the wire is introduced. After being allowed to remain for several seconds it is withdrawn and the whitened orifice alone marks to the eye the effect of the cauterisation. The cotton is withdrawn upon the probe and not left in the tonsil. He states that by renewing the cotton for each follicle several may be cauterised at the same sitting without any annoying irritation to the throat. A very few applications will cause the gland to shrink. Theoretically this mode of treatment would commend itself to consideration, and Dr. Chisholm's experience verifies the theory as being thoroughly practical.—*Va. Med. Mo.*, April, 1884, and *St. Louis Courier of Med.*

SARCOMA OF THE OVARY IN A CHILD.

DR. EDWARD EVERS (*St. Louis Courier of Medicine*, August, 1884) reports a case of ovarian tumour in a child two and a half years old. The child died seven weeks after the first appearance of the growth with the symptoms of pulmonary œdema. The *post mortem* revealed an ovarian tumour of the right ovary, measuring twenty-seven inches in its longest circumference and twenty-five and a half in the smaller, weighing eight pounds. It was adherent to the peritoneum, the bowels and the bladder, but the adhesions were easily separated by the hand. The tumour could have been removed by operation without difficulty. Such an operation was suggested to the parents, but not urged, in view of the probably malignant character of the growth. The microscopic examination proved the tumour to be a sarcoma, with scarcely a trace of normal structure left. Although quite a number of ovarian tumours in children have been observed, all these tumours, according to the author, were fibroids, or fibro-cystic growths, and he can find no record of a sarcoma of the ovary in one so young.

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